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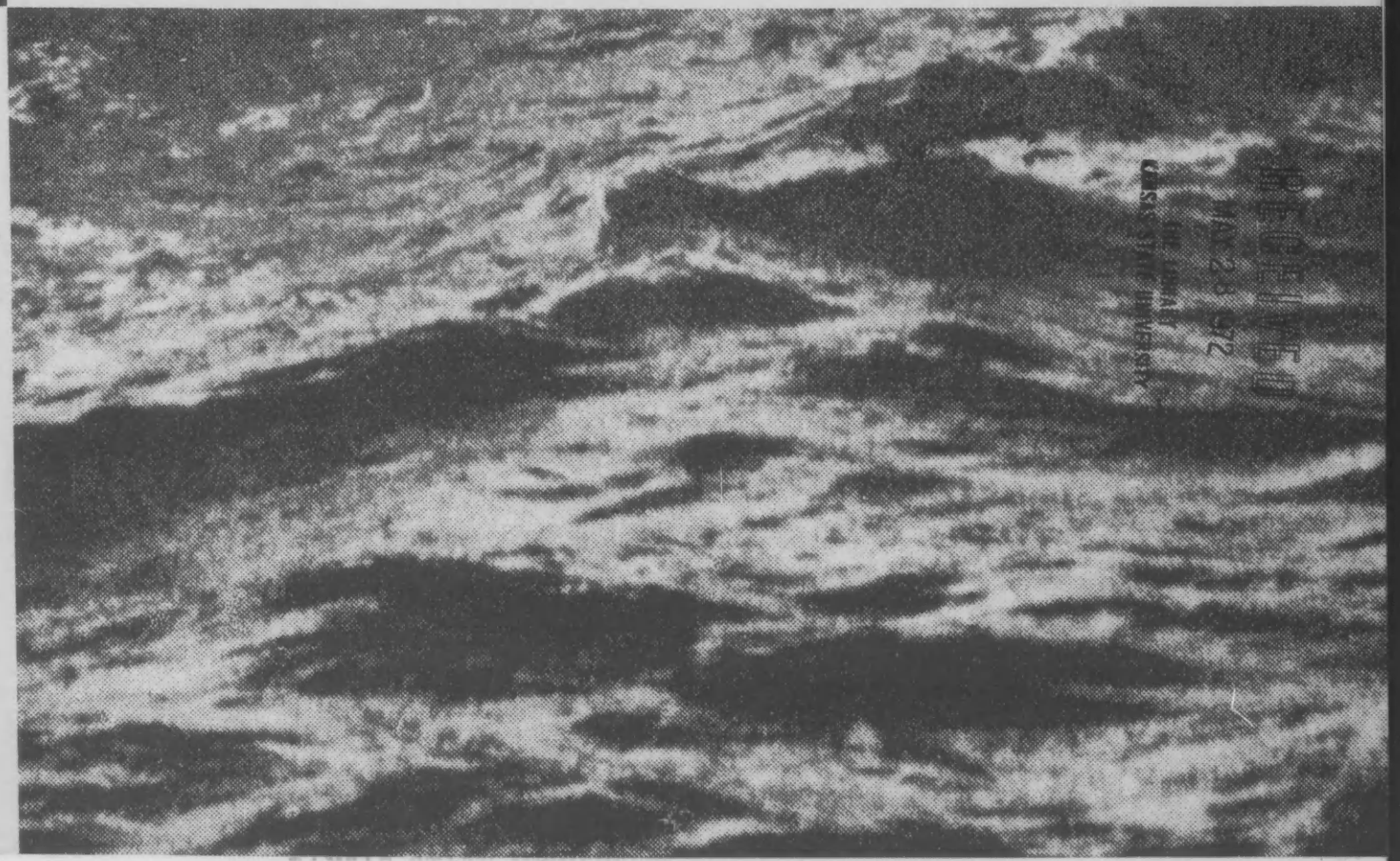

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UNITED STATES DEPARTMENT OF COMMERCE
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Frank T. Piskur
Editor

0.35 (0.2) HIGH-RESOLUTION PROTON MAGNETIC RESONANCE SPECTRA OF A RABBIT SCIATIC NERVE

Dea, Phoebe, Sunney I. Chan (Noyes Laboratory of Chemical Physics, California Institute of Technology, Pasadena, CA 91109), and Frank J. Dea (Department of Clinical Pharmacology and Pharmacokinetics, University of Southern California, Los Angeles, CA 90033)
Science 175, No. 4018, 206-209 (January 14, 1972)

This article is a report of a 220-Mhz proton magnetic resonance study of an isolated rabbit sciatic nerve in its native state. The results indicate that the sciatic nerve contains hydrophobic regions that are sufficiently fluid to give a high-resolution PMR spectrum. The authors attribute these liquidlike hydrophobic regions to the fatty acid side chains of the phospholipids of the nerve. These observations are in agreement with the results of recent electron spin resonance spin-labeled studies of excitable membranes of nerve and muscle.
[3 figures, 9 references] FTP

0.37 (3.5)(3.12) EQUILIBRIUM RELATIVE HUMIDITY RELATION OF SALTED FISH (BARBUS CARNATICUS AND RASTRELLIGER CANAGURTA): EFFECT OF THE CALCIUM AND MAGNESIUM AS IMPURITIES IN COMMON SALT USED FOR CURING

Iyengar, J. R., and D. P. Sen (Cent. Food Technol. Res. Inst., Mysore, India)
Chemical Abstracts 74, No. 7, 30832f (Feb. 15, 1971)

0.38 PANCREATIC TRYPSINOGEN FROM THE AFRICAN LUNGFISH

Reeck, Gerald R., and Hans Neurath (Department of Biochemistry, University of Washington, Seattle, WA 98105)
Biochemistry 11, No. 4, 503-510 (February 15, 1972)

Trypsinlike enzymes from lower vertebrates, invertebrates, and microorganisms have been discovered and characterized during the past few years. These include pancreatic trypsin from the dogfish, and trypsinlike enzymes from the starfish, shrimp, sea pansy, horseshoe crab, crayfish, moth, and a bacterium, Streptomyces griseus. Apparently, the amino-acid compositions and molecular weights of these proteins are similar to those of bovine trypsin (23,000). The possibility exists that the sequences of many, if not all, of the trypsins listed are homologous to those of the vertebrate trypsins. Earlier, G. R. Reeck, W. P. Winter, and H. Neurath [Biochemistry 9, 1398 (1970)] reported on the chromatographic analysis of the major enzymes and zymogens in the pancreas of African lungfish (Protopterus aethiopicus, identifying three separate chromatographic fractions containing trypsinogen. In the present study, one of these fractions was purified and characterized, and was related to the evolutionary pattern of trypsins.

The purified pancreatic trypsinogen from the African lungfish was characterized by molecular weight, amino-acid composition, amino-terminal sequence, and by activation. The activation peptide of the zymogen has the sequence Phe-Pro-Ile-Glu-Glu-Asp-Lys- and differs from all previously known trypsinogens in lacking a tetraaspartyl sequence. The authors present a scheme for the evolutionary changes in the structure of the activation peptide of trypsinogen.
[9 figures, 5 tables, 34 references] FTP

0.38 (9.19) MIXED FUNCTION OXIDASE ACTIVITY IN FRESHWATER FISHES: ALDRIN EPOXIDATION AND PARATHION ACTIVATION

Ludke, J. Larry, James R. Gibson, and Christina I. Lusk (Department of Zoology, Mississippi State University, State College, MI 39762)
Toxicology and Applied Pharmacology 21, No. 1, 89-97 (January 1972)

These experiments demonstrate that fresh-water fishes possess mixed function oxidase enzymes which catalyze the epoxiation of aldrin and the activation of parathion in vivo. These reactions probably occur in the liver because aldrin accumulates rapidly in the liver and is followed by simultaneous decrease in aldrin and increase in dieldrin. Mixed function oxidase inhibitors, sesamix (methylenedioxyphenyl compound) and SKF525A(N-alkyl compound), antagonized parathion activation and toxicity, and antagonized only the epoxidation of aldrin. There is a mutual antagonism between parathion and aldrin in which simultaneous treatment reduces the metabolism of both compounds.

The authors suggest that the mixed function oxidase systems in fresh-water fishes may be a rule rather than an exception and that earlier failures to demonstrate in vivo epoxidation of aldrin may have been due to inadequate methodology. Furthermore, the present findings substantiate observations that aldrin epoxidation is not necessarily an activation.
[2 figures, 7 tables, 17 references] FTP

0.38 A FLUORESCENT MODIFICATION OF ADENOSINE TRIPHOSPHATE WITH ACTIVITY IN ENZYME SYSTEMS: $1,N^6$-ETHENOADENOSINE TRIPHOSPHATE

Secrist, John A., III, Jorge R. Barrio, and Nelson J. Leonard (School of Chemical Sciences, University of Illinois, Urbana, IL 61801)
Science 175, No. 4022, 646-647 (February 11, 1972)

Adenosine triphosphate (ATP) is the universal stoichiometric coupling agent between metabolic sequences and it also acts as a regulatory modifier of these sequences [D. E. Atkinson, Adv. Enzyme Regul. 9, 207 (1971)]. The present paper reports on the synthesis of a highly fluorescent analog of ATP ($1,N^6$-ethenoadenosine triphosphate) by reaction of ATP with chloroacetaldehyde, and describes the fluorescence properties of the analog and its behavior with several enzyme systems. It appears to be a valuable probe of enzymic mechanism and structure.
[1 table, 17 references] FTP

0.38 (6.3) GLYOXYLATE CARBOXY-LYASE ACTIVITY IN THE UNICELLULAR GREEN ALGA GLOEOMONAS SPECIES

Badour, S. S., and E. R. Waygood (Dep. Bot., Univ. Manitoba, Winnipeg, Manitoba, Canada)
Chemical Abstracts 75, No. 25, 147949y (Dec. 20, 1971)

0.35 MOLECULAR VARIANTS OF GOLFINGIA GOULDII HEMERYTHRIN. THE PRIMARY STRUCTURE OF THE VARIANTS ARISING FROM FIVE AMINO ACID INTERCHANGES

Klippenstein, G. L. (Department of Biochemistry, University of New Hampshire, Durham, NH 03824)
Biochemistry 11, No. 3, 372-380 (February 1, 1972)

The object of this study was to identify the site or sites of amino-acid interchange in hemerythrin (the nonheme iron respiratory protein of sipunculids, priapulids, and some brachiopods and annelids) and to examine the effect of such variations on the properties of the protein molecule. The researchers analyzed hemerythrin from individual animals and from pooled blood. The monomeric hemerythrin from the coelom of the sipunculid Golfingia gouldii was resolved into two components by disc electrophoresis and DEAE-cellulose chromatography. The results indicated that the differences between individual animals are caused by the occurrence of varying quantities of two major hemerythrin components. Also, the two proteins differ at five sites in the amino-acid sequence.
[8 figures, 2 tables, 34 references] FTP

0.38 (0.5) HYDROLYTIC ENZYMES OF SOME PERIPHYTIC MARINE BACTERIA

Corpe, William A., and Harvey Winters (Barnard Coll., Dept. of Biology, New York, N.Y.)
Progress Rept. on Contract N00014-68-A-0225-0001, 20 pp. (October 13, 1971) Prepared in cooperation with Fairleigh Dickinson Univ., Dept. of Biology, Teaneck, N.J. Available from the National Technical Information Service, Operations Division, Springfield, VA 22151. Order No. AD-731 405; PC$3.00;MF$0.95.
Government Research Announcements 71, No. 23, 53 (December 10, 1971)

Several periphytic marine bacterial cultures were examined for their hydrolytic enzyme content. Quantitative assays were done for extracellular and intracellular proteinase, phosphatase, esterase, Beta glucosidase and four polysaccharide hydrolase activities. (Author) Reprinted

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0.35 (5.0) NOMENCLATURE POLICY: GENERIC DESCRIPTORS AND TRIVIAL NAMES FOR VITAMINS AND RELATED COMPOUNDS

Anonymous
Journal of Nutrition 102, No. 1, 157-164 (January 1972)

The nomenclature policy of this journal, described in this article, is based on the "Tentative Rules for Generic Descriptors and Trivial Names for Vitamins and Related Compounds" recommended by the International Union of Nutrition Sciences Committee on Nomenclature, and the Committee on Nomenclature of the American Institute of Nutrition. The history of development of the "Tentative Rules," and general principles underlying them were published in the Journal of Nutrition 101, 133-140 (1971). FTP

0.38 [ALANINE AMINOTRANSFERASE IN THE SKELETAL MUSCLE OF CARP] ALANIN-AMINOTRANSFERASE IN DER SKELETMUSKULATUR DES KARPFENS

Masic, D., and R. Hamm (Institut für Chemie und Physik der Bundesanstalt für Fleischforschung, Kulmbach, Germany)
Archiv für Fischereiwissenschaft 22, No. 3, 256-262 (December 1971) (In German; summary in English)

The total alanine aminotransferase (glutamic-pyruvic transaminase, GPT) activity of the light skeletal muscle of the carp was 50 times lower than the total aspartate aminotransferase (glutamate oxaloacetic transaminase, GOT) activity. The total GPT activity in the light carp muscle did not change when the tissue was held in cold storage (4° C.) or when it was frozen (-20° C.) and thawed. The total GPT activity in the press-juice of the muscle did not change when the tissue was stored (post-mortem) at 4° C. for 48 hr.; however, when the carp tissue was frozen and thawed, an increase in GPT activity resulted in the muscle press-juice (probably due to freeze-damage of the muscle mitochondria). No GPT isozymes could be demonstrated by electrophoretical methods.
[1 figure, 3 tables, 18 references] [Authors' abstract modified by FTP]

0.6 A CONDENSED HISTORY OF THE SCIENCE AND TECHNOLOGY OF THERMAL PROCESSING--PART 2.

Goldblith, Samuel A. (Department of Nutrition and Food Science, Massachusetts Institute of Technology, Cambridge, MA 02139)
Food Technology 26, No. 1, 64-69 (January 1972)

The work of William L. Underwood and Samuel C. Prescott around the end of the 19th century are discussed in this article.
[3 figures, 36 references] FTP

0.38 COMPARATIVE STUDIES ON STRUCTURAL AND CATALYTIC PROPERTIES OF ENOLASES

Wold, Finn, and Janet M. Cardenas (Med. Sch., Univ. Minnesota, Minneapolis, Minn.)
Chemical Abstracts 75, No. 5, 30390t (Aug. 2, 1971)

0.39 (8.51)(1.30) EXPLANATION FOR UNUSUAL POTENCY OF SALMON CALCITONIN

Habener, Joel F., Frederick R. Singer, Leonard J. Deftos, Robert M. Neer, and John T. Potts, Jr. (Dep. Med., Harvard Med. Sch., Boston, Mass.)
Chemical Abstracts 75, No. 17, 105608f (October 25, 1971)

0.35 HUMAN TASTE PAPILLA STIMULATION: STABILITY OF QUALITY JUDGMENTS OVER TIME

McCutcheon, N. B., and J. Saunders (Psychology Department, State University of New York, Albany, NY 12203)
Science 175, No. 4018, 214-216 (January 14, 1972)

The authors found that the single fungiform taste papilla is capable of responding to both sucrose and citric acid with the typical distinctive tastes and, further, that the response pattern is stable over a month's test. Therefore, the taste response pattern does not appear to be affected by turnover of receptor cells.
[2 tables, 8 references] FTP

0.5 SURVIVAL OF VIBRIO PARAHAEMOLYTICUS IN SHRIMP TISSUE UNDER VARIOUS ENVIRONMENTAL CONDITIONS

Vanderzant, C., and R. Nickelson (Animal Science Department, Texas A&M University, College Station, TX 77843)
Applied Microbiology 23, No. 1, 34-37 (January 1972)

This article contains information on the survival of Vibrio parahaemolyticus in shrimp tissue under various environmental conditions (pH and temperature). V. parahaemolyticus culture O from Gulf Coast shrimp was inoculated into whole shrimp and homogenate of shrimp and the samples were stored at various temperatures (3°, 7°, 10°, -18° C.). The effect of pH was determined on the shrimp homogenates at pH values of 5, 6, 7, 8, 9, and 10.

Large decreases in the viable population of the organism occurred during storage of the samples for 2 days at 10° to -18° C.; however, survivors were present even after 8 days. The researchers found no significant differences in the population changes of the inoculated whole shrimp as compared with the population changes of the inoculated shrimp homogenates.

V. haemolyticus was very sensitive to the pH value of 5.

[4 figures, 7 references] FTP

0.5 NUMERICAL TAXONOMY OF CORYNEFORM BACTERIA ISOLATED FROM POND-REARED SHRIMP (PENAEUS AZETECUS) AND POND WATER

Vanderzant, C., P. W. Judkins, R. Nickelson, and H. A. Fitzhugh, Jr. (Animal Science Department, Texas A&M University, College Station, TX 77843)
Applied Microbiology 23, No. 1, 38-45 (Jan. 1972)

By use of numerical taxonomy, the researchers (1) compared characteristics of coryneforms from pond shrimp and pond water with those of type cultures of Corynebacteriaceae and (2) developed a classification for the pond isolates based on biochemical and physiological characteristics.

The pond isolates could be placed into six major groups based on certain biochemical and physiological tests. The coryneform microorganisms isolated from shrimp and water showed little similarity to the type cultures. The authors suggest that the pond isolates are probably members of the Corynebacteriaceae not previously studied in detail.

[6 figures, 4 tables, 7 references] FTP

0.5 SOME OBSERVATIONS ON THE MICROFLORA OF DISPOSABLE PAPER HAND-WIPES

Koburger, John A., and Robert M. Lapin (Department of Food Science, University of Florida, Gainesville, FL 32601)
Journal of Milk and Food Technology 35, No. 1, 30-31 (Jan. 1972)

Thirty-eight samples of disposable paper hand towels and napkins were checked for their microbial content. Fifty percent of the samples had bacterial counts of < 100 organisms per gram; the rest of the samples had bacterial counts of up to 7,200 per gram. The flora consisted mainly (about 90%) of Bacillus species with the remainder of actinomycetes, clostridia, micrococci, molds, and diphtheroids. Bacillus cereus was found in five of the samples. The authors conclude that the microbial quality of disposable paper hand-wipes was good. However, they add, the hand-wipes are not sterile and caution should be practiced when these products are used in contact with foods.

[1 table, 3 references] FTP

0.6 (9.6) MARINE FOOD TECHNOLOGY [TECHNOLOGIA ŻYWNOŚCI POCHODZENIA MORSKIEGO]

Sikorski, Z. E.
Published by Wydawnictwa Naukowo-Techniczne, Warszawa (December 1971), Contains 574 pp., 93 tables, and 315 illustrations. Price 100 Polish zloty. (In Polish)

The author, chairman of the Department of Fish Technology of the Technological University Politechnika Gdanska, prepared a textbook based on up-to-date research findings and industrial achievements. It covers, in 14 chapters, the entire field of marine food technology. A main purpose of the book was to illustrate how fundamental physical, chemical, and biochemical phenomena occurring in the processed or stored raw material influence the final quality of the products.

The book contains the following chapters:

1. "The biological and technical fundamentals of the production of foods from the seas." 62 pp. [46 illustrations, 7 tables, and 48 references]
2. "The chemical composition of main marine foods." 48 pp. [14 illustrations, 15 tables, and 88 references]
3. "Technological characteristic of marine foods." 63 pp. [37 illustrations 3 tables, 85 references]
4. "Mechanical processing of fish." 21 pp. [24 illustrations, 6 tables, 17 references]
5. "Refrigeration and cold storage of fish." 36 pp. [19 illustrations, 8 tables, 47 references]
6. "The freezing preservation of marine foods." 70 pp. [45 illustrations, 10 tables, and 136 references]

(over)

0.5 (2.3) MICROBIAL FLORA OF PACIFIC OYSTERS (CRASSOSTREA GIGAS) SUBJECTED TO ULTRAVIOLET-IRRADIATED SEAWATER

Vasconcelos, G. J., and J. S. Lee (Department of Food Science and Technology, Oregon State University, Corvallis, OR 97331)
Applied Microbiology 23, No. 1, 11-16 (Jan. 1972)

The researchers tested the ability of oysters to purge themselves of microbial contaminants by identifying the microorganisms retained by the oysters after they had been subjected to ultraviolet (UV) light-treated sea water. Pacific oysters were used. The oyster purification system consisted of thirteen 30-watt germicidal (UV) lamps arranged in linear configuration; each lamp emitted almost 253.7-nm. radiation. The test aquarium received irradiated sea water and the control aquarium received nonirradiated sea water. The flow of the irradiation treated sea water was such that it received a UV intensity of 960 μw. per $cm.^3$.

The UV light reduced the microbial count of sea water from 263 to 13 per ml. and the coliform multitube test (MPN) was reduced from a high of 17 to < 0.18 per 100 ml. Most (over 75%) of the microorganisms in the treated sea water were Acinetobacter/Moraxella, Vibrio/Pseudomonas type II, and Flavobacterium/Cytophaga.

The microbial composition (except for the coliforms) of the oysters held in the UV light-treated sea water remained at levels comparable to that of the oysters held in untreated sea water. Total counts of the oysters ranged from 10^3 to 10^5/g. Most (over 90%) of the microorganisms in the oysters consisted of Flavobacterium/Cytophaga, Vibrio/Pseudomonas type II, Pseudomonas type III or IV, Acinetobacter/Moraxella, gram-positive cocci and Bacillus. Also some samples contained coagulase-positive, deoxyribonuclease-positive, and beta-hemolytic cocci, V. parahaemolyticus, V. aliginolyticus, and Aeromonas species.
[3 figures, 4 tables, 31 references] FTP

0.5 AQUATIC AND MARINE MICROORGANISMS, INTERRELATIONSHIPS IN ENRICHMENT CULTURES

Ordal, Erling J. (Univ. Washington, Dept. of Microbiology, Seattle, Wash.)
Final Technical Rept., 16 Oct 68-30 Jun 70, Contract N00014-67-A-0103-0006, 20 pp. (October 14, 1971) Available from the National Technical Information Service, Operations Division, Springfield, VA 22151. Order No. AD-731 409; PC$3.00; MF$0.95.
Government Research Announcements 71, No. 23, 53 (December 10, 1971)

The method of steady-state enrichment cultures was applied to the study of marine nitrifying bacteria. Steady-state enrichment cultures were employed to determine the range of organic compounds used by Sphaerotilus. Cultures grown on glucose plus mineral salts grew well in enrichment cultures but failed to grow in pure culture unless vitamins were added. It was concluded that associated bacteria were providing the necessary vitamins for growth of Sphaerotilus. A group of marine vibrios isolated from diseased salmon and herring were investigated by several methods. Strains of Vibrio anguillarum from the Pacific Northwest were closely related to strains from Scotland and Denmark. However, a number of other vibrios were clearly distinct, indicating that there are several kinds of marine vibrios. (Author) Reprinted

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0.8 (0.12)(6.54) POWER CONSUMPTION IN SOLID-LIQUID SLURRIES

McPhee, Archie D., and Norman L. Brown (Natl. Cent. Fish Protein Con., Mar. Fish. Serv., College Park, Md.)
Chemical Abstracts 75, No. 26, 153220v (December 27, 1971)

0.8 (2.3) RECENT DEVELOPMENTS IN SANITARY DESIGN OF FOOD PROCESSING EQUIPMENT

Milleville, Howard P., and Wm. S. Stinson
Food Processing 33, No. 2, 14-18 (February 1972)

This article was prepared by editors of the Journal. It presents current and practical information on the sanitary design of food processing equipment. Future articles will cover specific sanitary equipment standards, the manufacturers making equipment to meet these standards, and illustrations and descriptions of food processing equipment that emphasizes good sanitary design. FTP [Illustrated]

0.6 (9.6)

7. "The salting and marinading of fish." 30 pp. [15 illustrations, 4 tables, 37 references]
8. "The smoke curing technology of fish." 44 pp. [24 illustrations, 7 tables, 87 references]
9. "Drying of fish and the production of marine protein concentrates." 28 pp. [7 illustrations, 7 tables, 44 references]
10. "The canning of fish." 65 pp. [42 illustrations, 9 tables, 39 references]
11. "The production of fish sausages." 22 pp. [14 illustrations, 1 table, 32 references]
12. "The radiation preservation of marine foods." 20 pp. [9 illustrations, 2 tables, 40 references]
13. "The fishery by-products technology." 35 pp. [13 illustrations, 13 tables, 57 references]
14. "Technological designing of fish processing plants." 11 pp. [6 illustrations, 1 table, 7 references]

The book is also provided with a thoroughly prepared index.
Abstract contributed by Edward A. Dunajski

0.8 SHRIMP PEELING MACHINE DRIVE MECHANISM

Lapeyre, James M.; assignor to Laitram Corp., New Orleans, La. (pat.)
U.S. Patent 3,626,551
Official Gazette of the U.S. Patent Office 893, No. 2, 415 (Dec. 14, 1971)

The mechanism drives the peeling rollers of a shrimp peeling machine and the pressure finger frames mounted thereover. FTP

0.5 PROCEDURE FOR ISOLATION AND ENUMERATION OF VIBRIO PARAHAEMOLYTICUS

Vanderzant, C., and R. Nickelson (Animal Science Department, Texas A&M University, College Station, TX 77843)
Applied Microbiology 23, No. 1, 26-33 (Jan. 1972)

In certain areas, Vibrio parahaemolyticus is responsible for the majority of food borne gastroenteritis. The purpose of the present study was (1) to evaluate the criteria now used for presumptive identification of V. parahaemolyticus and to determine the fewest and most reliable characteristics for identification and (2) to develop a rapid and reliable method for the isolation and enumeration of V. parahaemolyticus. The present authors report information on the isolation, identification, and public health significance of V. parahaemolyticus in a review in the Journal of Milk and Food Technology (in press). With their procedure, a satisfactory quantitative recovery of known V. parahaemolyticus from inoculated seafoods was possible.
[4 tables, 15 references] FTP

0.6 SAFETY EVALUATION OF YEAST GROWN ON HYDROCARBONS. III. TWO-YEAR FEEDING AND MULTIGENERATION STUDY IN RATS WITH YEAST GROWN ON GAS OIL

De Groot, A. P., H. P. Til, and V. J. Feron (Central Institute for Nutrition and Food Research, TNO, Zeist, Netherlands)
Food and Cosmetic Toxicology 9, No. 6, 787-800 (Dec. 1971)

This paper is a report of a 2-year study of rats fed diets containing protein concentrate from yeast produced by the gas oil process. The yeast was fed to rats at dietary levels of 10, 20, or 30% for 2 years. Two control diets were used; the first was similar to the yeast diets but contained soybean-oil meal instead of the yeast, and the second was the Institute's stock diet. The multigeneration study showed no effect of the yeast diet on fertility, lactation performance, or embryonic and preweaning mortality. The authors concluded that the yeast examined did not cause any deleterious effects in rats.
[Parts I and II of this series of reports were published in the same journal, vol. 8, page 267 and page 499 (1970).]
[9 tables, 7 references] FTP

0.6 PRODUCTION OF A MILK PROTEIN CONCENTRATE

Olsansky, Cestmir, Vladimir Simajchl, Josef Karafiat, Karel Pazdersky, Miroslav Blena, and Jirina Kohlova (Vychodoceske Mlek. n.p., Pardubice, Czechoslovakia)
Chemical Abstracts 75, No. 13, 87157b (Sept. 27, 1971)

1.0 TRAWLING RESOURCES ON THE NORTH-ATLANTIC CONTINENTAL SLOPE

Pechenik, L. N., and F. M. Troyanovskii (Northern Fishing Reconnaissance, Ul. S. Perovskoi 2, Murmansk, U.S.S.R.)
Main Administration of the Fishing Industry, Northern Basin, Northern Fishing Reconnaissance, Murmansk, (1970), iv + 66 pp. [Translated by E. Vilim and H. Mills, Israel Program for Scientific Translations, Ltd.] Available from the U.S. Department of Commerce, National Technical Information Service, Springfield, VA 22151.

This booklet describes the results of exploratory fishing in regions of the North Atlantic continental slope carried out during 1963 to 1968 by vessels of the Northern Fisheries Reconnaissance (U.S.S.R.).
Chapter I gives a brief description of the North Atlantic continental slope; Chapter II describes the zone of the continental slope in the western part of the Barents Sea; Chapter III describes the zone of the continental slopes around Iceland; Chapter IV describes the zone of the continental slope in the regions of the Flemish Cap Bank and northern Newfoundland Bank, and around Labrador and Baffin Island; and Chapter V describes the main features of trawling at great depths, as based on the experiences of the skippers of search and fishing vessels.
[44 figures, 13 tables, 23 references] FTP

0.8 (9.19) COMPARATIVE EVALUATION OF BIOLOGICAL TYPE FOOD PROCESSING LIQUID WASTE DISPOSAL SYSTEMS

Wilson, John M., B. A. Twigg, and A. Kramer (Dept. of Horticulture, Maryland Univ., College Park, MD 20740)
Rept. for Jul 65-Jun 71, 107 pp. (June 1971) W71-13308 OWRR-A-005-MD(4). Available from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22151; Order No. PB-203 068, PC$3.00 MF$0.95.
Government Research Announcements 71, No. 22, 130-131 (November 25, 1971)

Food Processing plants have the capability of discharging up to 36 billion gallons of waste water annually. This liquid waste must be disposed of in a manner which decreases its strength to a level required by water regulatory agencies. Several variations of lagoon type biological systems using two lagoons in series have been investigated over a two-year period. The results indicate that the semi-anaerobic-aerated and the forced aerated systems merit further consideration as efficient disposal methods. The open or facultative system serves only as a dumping place with settling as the primary treatment process. The BOD/COD relationships were studied and variations from the ratios reported in the literature were observed. In the anaerobic and open systems the BOD/COD ratios were approximately 1.0 or greater. In the forced aeration units the ratio was considerably less than 1.0. The possibility exists that these values could be of assistance in determining the conditions of the lagoon. Reprinted

1.0113 (9.2) COMMERCIAL SEAFOOD INDUSTRY OF OREGON: A COMPARISON WITH OTHER REGIONS OF THE UNITED STATES

Rettig, R. Bruce, and Kenneth J. Roberts (Oregon State University, Agricultural Experiment Station, Corvallis, Oreg.)
Special Report No. 331, 11 pp. (July 1971) (Sponsored by NOAA, Office of Sea Grant, Rockville, Md.) Available from the National Technical Information Service, U.S. Dept. of Commerce, Sills Bldg., Springfield, VA 22151. Order No. COM-71-01041.
NOAA Publications Announcement No. 71-20, (71-20-16-02), 4 (December 1971)

This study examines one source of ocean wealth--seafood--in the United States, particularly in the State of Oregon. Section I is directed toward the role of seafood as a means of livelihood. Only employment in catching and processing seafood is described in this study, although harvesting and processing of seafood give rise to many additional jobs in related areas such as fishing gear and financial services. Section II describes the seafood species caught at both the national level (United States as whole) and the regional level. Description of seafood landings is given for all major regions of the United States so that some comparison between Oregon and the rest of the United States can be made. Section III deals with the demand for seafood. The discussion focuses on the forces which lead consumers to value some seafood products more highly than others and to value various seafood products differently than nonseafood products. (NOAA abstract)

0.8 INTEGRATION OF COMPUTER MODELING TECHNIQUES WITH LABORATORY EXPERIMENTS AT ALL STAGES OF DESIGN, MODIFICATION AND INTERPRETATION OF RESULTS

Welsh, Barbara L. (School of Oceanography, University of Rhode Island, Kingston, RI 02881), and Edward J. Carney (Department of Computer Science and Experimental Statistics)
Marine Reprint No. 1, 5 pp. (1971) (Marine Advisory Service, University of Rhode Island, Narragansett Bay Campus, Narragansett, RI 02882) Price: Free

The authors integrated computer simulation, laboratory experiments, and field measurements to determine the dynamics of growth of mixed populations of bacteria associated with the marsh grass Spartina alternaflora.
[9 figures, 5 references] FTP

0.9 THE MARINE TECHNICIAN - PAST, PRESENT, AND FUTURE (9.7)(0.8)

Benson, Richard C. (Department of Marine Technology, Miami-Dade Junior College, Miami, Fla.)
Paper presented at Conference of Marine Technology Society, Washington, D.C. (1971) pp. 271-287
NOAA Publications Announcement No. 71-20 (71-20-20-05), 9 (Dec. 1971)

The general origin and role of the technician are discussed. The concept of the Marine Technician evolves from considerations of past practices, community needs, and actions taken to meet these needs. The role of the supporting community is discussed and significant factors for a successful program are outlined. Photos are presented to emphasize the need for hands-on training. (Author)
Reprinted

0.7 SOME THOUGHTS ON FOOD AND CANCER

Ackerman, Lauren V. (Washington University School of Medicine, St. Louis, MO 63110)
Nutrition Today 7, No. 1, 2-9 (January-February 1972) (1140 Connecticut Avenue, N.W., Washington, DC 20036)

About 80% of all cancer in man are related to one or more factors in man's environment. Some cancers are related to our nutrition or to contamination of our food. The author believes that there are carcinogens in our food that may become activated through a variable bacterial flora or through some other mechanism. In his opinion, the environmental factor of nutrition contributes in significant measure to genesis of the second most lethal cancer in North America, cancer of the large intestine.
[6 figures, 4 illustrations] FTP

0.8 PROCEEDINGS OF THE FIRST NATIONAL CONFERENCE ON COMPOSTING--WASTE RECYCLING

Published by Rodale Press, Emmaus, PA 18049, Price $10.00

Announcement of the availability of the Proceedings appeared in Compost Science 13, No. 1 (inside cover page) (January-February 1972). The conference was held May 20-21, 1971, in Denver, Colo. The sessions included: (1) Recycling Systems: An Overview, (2) Recycling Dialogue: Industry, Government and Citizen, (3) Economics of Waste Cycling, (4) Composting--Past, Present and Future, (5) Applying Wastes on the Land, (6) What New Laws Would Help Recycling, (7) How Cities Can Help Solve Recycling Problems, (8) The Public and Recycling, and (9) Teaching Recycling in Public Schools as Part of Environmental Education. FTP

1.120 (9.12) THE FOOD OF SKIPJACK AND YELLOWFIN TUNAS IN THE ATLANTIC OCEAN

Dragovich, Alexander (Bureau of Commercial Fisheries, Tropical Atlantic Biological Laboratory, Miami, Fla. 33149)
Fishery Bulletin 68, No. 3, 445-460 (June 1971) (National Marine Fisheries Service, NOAA, U.S. Department of Commerce, Washington, D.C. 20235)

A thorough knowledge of food and feeding habits of tuna is important to an understanding of the biology, abundance, and distribution of tuna species.

Samples were examined from the stomachs of 1,060 skipjack tuna and 611 yellowfin tuna captured by live bait, longline, trolling, and purse seine in the eastern and western tropical and subtropical Atlantic Ocean in 1965 and 1966. Fish, mollusks, and crustaceans were the principal foods of both species. The major families of fish represented were Scombridae, Carangidae, Serranidae, Balistidae, Gempylidae, and Tetraodontidae; mollusks consisted chiefly of cephalopods (squids); and crustaceans were principally larval macrozooplankton. Frequency of occurrence and displacement volume are given for all taxons of food organisms identified from the stomachs of each species.

Fish was the predominant forage volumetrically throughout the Atlantic Ocean and numerically in the western Atlantic; crustaceans were predominant numerically in tunas caught in the eastern Atlantic. In general, crustaceans predominated in the stomachs of the smaller tunas and fish in the stomachs of the larger ones. When the mean percentages of the three principal sources of tuna food--fish, mollusks, and crustaceans--were compared (for tunas caught concurrently), the evidence was that skipjack tuna ate more crustaceans than did yellowfin tuna. Juvenile tunas were eaten by both skipjack and yellowfin tunas.
[5 figures, 3 tables, 16 references] Reprinted in part

0.8 (9.19) THE ENGINEER AND THE ENVIRONMENT

Anonymous
Report WRRC-Bull-38 W71-12692, OWRR-A-999-MINN (1), 55 pp. (August 1971) Presented at the Seminar on the Engineer and the Environment at the Nolte Center for Continuing Education, Minneapolis, Minn. on 20 Nov 70. Available from the National Technical Information Service, Operations Division, Springfield, VA 22151. Order No. PB-202 853; PC$3.00; MF$0.95.
Government Research Announcements 71, No. 21, 49 (November 10, 1971)

The publication contains the papers presented at the 'Seminar on the Engineer and the Environment,' presented by the Department of Conferences and Institutes of the General Extension Division of the University of Minnesota. The subjects of the papers are: An Ecological Approach to Natural Resource Problems; Drainage and the Environment; Environmental Aspects of Water Resources Planning and Development; Social Aspects of Ecology; The State Concern in Engineering Planning for Water Resources; and The Challenge of Environmental Concerns in the Future of Engineering. (Author) Reprinted

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1.0156 FISHERIES AND FISH CULTURE IN ISRAEL IN 1970

Sarig, S. (Laboratory for Research for Fish Diseases, Nir David, Israel)
Bamidgeh 23, No. 3, 63-84 (September 1971)

The total fish production in 1970 was 9% higher than in 1969; 94% of this increase consisted of pond fish.
[7 figures, 18 tables, 2 references] FTP

2.115 (0.8) STUDIES ON STRENGTH PROPERTIES OF FRP SHIPS STRUCTURE (I) CONCERNING ROLE OF FRAME AND NON FRAME CONSTRUCTION

Morimura, Shinji (Laboratory of Chemistry of Fish Oil, Faculty of Fisheries, Hokkaido University, Hakodate, Japan)
Bulletin of the Faculty of Fisheries Hokkaido University 22, No. 2, 143-150 (August 1971) (In Japanese; figures, tables, references, and abstract in English)

In this article the author discusses the role of the frame in the construction of FRP [Fiberglass Reinforced Plastic ?] ships; he also discusses the practicability of a nonframe construction.
[9 figures, 1 table, 3 references] FTP

FTP
[5 figures] $2,500,000. total cost, b.hp.; crew requirements, 20 men; estimated capacity 60,000 cu. ft.; propulsion, 2,500 depth midships, 24 ft.; number of containers, 76; total volume of containers, vessel characteristics would be as follows: LOA, 210 ft.; beam molded, 60 ft.;
This proposed containerized vessel would be used for catching fish; also, the fish would be processed aboard ship and the finished products stored in containers that can be unloaded at conventional docks or floated off. The minimum
Ross, Ian
Western Fisheries 83, No. 4, 14, 35, 36, 38 (Jan. 1972)
2.118 A CONTAINERIZED FACTORY-TRAWLER

2.12 (1.013) (2.117) PROSPECCIONES HIDROACUSTICAS EN EL ORIENTE DE VENEZUELA DESDE ENERO HASTA ABRIL DE 1971 [HYDROACOUSTIC SURVEYS IN EASTERN VENEZUELA FROM JANUARY TO APRIL 1971]

Odegaard, J. A., S. Abad Carpio, and F. Malave
Fisheries Research and Development Project, Informe Técnico No. 32, 23 pp. (1971) (In Spanish; English summary) (Library and Information Services, Fisheries Research and Development Project, Apartado 2578, Caracas, Venezuela)

This report describes the results obtained from echosurveys and other cruises made from 1 January to 30 April, 1971, in the coastal waters of northeastern Venezuela.

The vessels used, together with their hydroacoustic instrumentation, are briefly described.

The cruise tracks for each of the eleven cruises are included and show also the distribution and abundance of the pelagic fish schools and some data are given on single fish (almost invariably found on the bottom). All the maps and echograms are interpreted.

The methods used for plotting the fish schools and estimating the abundance are described. [19 figures] Authors' summary

2.117 (1.013) OBSERVACIÓNES Y RECOMENDACIONES PARA EL DESARROLLO DE LA FLOTA PESQUERA EN VENEZUELA [OBSERVATIONS AND RECOMMENDATIONS ON THE DEVELOPMENT OF THE VENEZUELAN FISHING FLEET]

Uilen, W., and J. Diaz de Rekarte
Fisheries Research and Development Project, Informe Técnico No. 34, 23 pp. (1971) (In Spanish; English summary) (Library and Information Services, Fisheries Research and Development Project, Apartado 2578, Caracas, Venezuela)

In this report a general description is given of the Venezuelan fishing fleet, considering its composition and development in recent years, as well as the problems encountered. Recommendations for its improvement are given, emphasizing the complexity of the factors that influence the design and, in particular, the size of fishing vessels. Diversification in fleet programming is recommended, various construction materials are compared and information is provided concerning costs of construction, operation and maintenance of vessels, in order to assist in deciding on vessel sizes. [6 figures, 6 tables, 3 references] Authors' summary

2.1471 (2.143) SOUND PERCEPTION AND PRODUCTION IN THE PINK SHRIMP, PENAEUS DUORARUM BURKENROAD

Gehring, William Richard (University of Miami, Sea Grant Program (Living Resources), Miami, Fla.)
Sea Grant Technical Bulletin No. 5, 60 pp. (Jan. 1971) Sales copies available from the National Technical Information Service, Sills Bldg., Springfield, VA 22151; Order No. COM-71-01068.
NOAA Publications Announcement 72-1 (72-01-16-17), 8 (January 1972)

Fishing for the commercially valuable pink shrimp is economically feasible only at night since it burrows during the day. Daylight fishing became theoretically possible with the electric shrimp trawl. The pulsed d.c. field was to bring the shrimp out of their burrows and make them vulnerable to the trawl. It has been suggested that the lower catches of shrimp are the result of their avoiding the trawl after they are brought out of their burrows. It has been proposed that the introduction of a "confusion factor" may decrease the percentage of shrimp escaping capture and increase the efficiency of the electric trawl. One purpose of this investigation was to examine sound and vibration perception in the pink shrimp, and on the basis of the findings to decide whether sound would provide a useful "confusion factor". A second purpose was to investigate sound production in the pink shrimp. It was hoped that if the shrimp produced a characteristic sound it might be of some use in detecting large concentrations of the animal. (Author) Reprinted

2.114 A NET-BOARD FOR SETTING BEACH SEINES FROM SMALL BOATS

Giger, Richard D., and DeWayne A. Williams (Oregon State Game Commission, Division of Wildlife Research, Oregon State University, Corvallis, OR 97331)
Transactions of the American Fisheries Society 101, No. 1, 133-135 (January 1972)

This article describes a net board that was designed for small boats as an aid in setting beach seines in areas of strong tidal currents, when floating and submerged debris are present, and where there is little or no beach area.
[2 figures] FTP

Reprinted (Author text, extract by WT) pilotage, and port facilities. channel and anchorage peculiarities, dangers, weather, ice, freshets, routes, where. Coast Pilot subjects include navigation regulations, outstanding landmarks, graphically on the standard nautical charts and is not readily available elsecoastal and intracoastal waters. Most of this book information cannot be shown that cover a wide variety of information important to navigators of United States The National Ocean Survey Coast Pilots are a series of eight nautical books

NOAA Publications Announcement No. 71-77, 10, Item 71-17-18-03 (October 1971)

22151)
formation Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Va.
NOAA, National Ocean Survey and its sales agents: $2.00; National Technical In-
National Ocean Survey, Washington, D.C., 302 pp. (1971) (For sale by the
Anonymous

2.119 UNITED STATES COAST PILOT 1, EIGHTH EDITION -- 1971, (9.6)(9.3) ATLANTIC COAST, EASTPORT TO CAPE COD.

3.12 STERILIZATION OF FOOD WITH CHLORAMINE T

Kato, Masatada (Toyo Kagaku Yakuhin Co., Ltd.) (pat.)
Japanese Patent 33737/70 (Oct. 29, 1970)
Chemical Abstracts 75, No. 5, 34248a (August 2, 1971)

3.11 [ON THE INFLUENCE OF EDIBLE AND MINERAL ACIDS ON THE PRESERVATIVE EFFECT OF SODIUM FORMATE]
ÜBER DEN EINFLUSS VON GENUSS- UND MINERALSÄUREN AUF DIE KONSERVIERENDE WIRKUNG VON NATRIUMFORMIAT

Scheer, H. (Institut für Biochemie und Technologie der Bundesforschungsanstalt für Fischerei, Hamburg, Germany)
Archiv für Fischereiwissenschaft 22, No. 3, 263-279 (December 1971) (In German; summary in English)

Respiration activity (as determined by manometric measurements) of Escherchia coli in neutral pH is not inhibited by sodium formate in a concentration of 148 mg./100 g., but is slightly increased. In acid pH range, the respiration activity of E. coli (pH value of culture medium was 5.6), as well as the decarboxylase activity of Betabacterium buchneri (pH value of culture medium was 4.5) were inhibited. The degree of the inhibitory effect is dependent upon (1) the concentration of sodium formate (74 mg., 148 mg., or 222 mg. per 100 g.), (2) the kinds of acids used to adjust the pH (formic acid, acetic acid, lactic acid, tartaric acid, citric acid, hydrochloric acid, sulfuric acid, phosphoric acid), and (3) the interaction of the acid used.
[24 figures, 5 tables, 4 references] FTP

2.119 SEMINAR ON TRAWLER SAFETY, OPERATION AND MAINTENANCE OF DEEP-SEA TRAWLERS UNDER ARCTIC CONDITIONS. A SEMINAR HELD AT THE ADMIRALTY SURFACE WEAPONS ESTABLISHMENT AND THE ADMIRALTY EXPERIMENT WORKS ON 23RD JUNE 1970

Williams, P. G.
Report No. NSTIC-28990, 72 pp. (July 1971) (Naval Scientific Technical Information Centre, Orpington, England) Available from the National Technical Information Service, Operations Division, Springfield, VA 22151; Order No. AD-728 903; PC$3.00; MF$0.95.
Government Research Announcements 71, No. 20, 120-121 (Oct. 25, 1971)

Contents

Ice accretion on ships; Icing and de-icing of distant water trawlers; Model testing; Recommendations on intact stability of fishing vessels; Icing on radar and communication aerials; The icing and de-icing of marine radar aerials; De-icing methods and engine noise reduction; Maneuvering of small ships at slow speed; Seakeeping. (Author) Reprinted

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[11 figures, 6 references]

This article reports on a full scale study of the relationship between the movement of a fishing trawler and the tension of the towing warp of the trawl. FTP

(In Japanese; figures and abstract in English)
Bulletin of the Faculty of Fisheries Hokkaido University 22, No. 1, 67-72 (May 1971)
date, Japan)
Amagi, Kiyoshi (Laboratory of Fishing Boat Seamanship, Hokkaido University, Hako-

2.1471 STUDY ON THE DYNAMICAL RESPONSE BETWEEN SHIPS'S [sic] MOTIONS (0.8) AND FISHING GEAR (I) ON THE STATISTICAL PROPERTIES OF SHIP'S MOTIONS AND WARP TENSION IN TRAWL FISHING

2.143 INDUCED AGGREGATION OF POND-REARED RAINBOW TROUT (9.16) (SALMO GAIRDNERI) THROUGH ACOUSTIC CONDITIONING

Abbott, Robert Riley (Fisheries Research Institute, University of Washington, Seattle, WA 98195)
Transactions of the American Fisheries Society 101, No. 1, 35-43 (January 1972)

Rapid aggregation of fish in reservoirs, in large ponds, or in lakes and estuaries would greatly facilitate the supplemental feeding, medication, and harvesting of these fish, as well as facilitate maintenance operations. With this in mind, the author examined the use of an acoustic stimulus for inducing fish reared in a pond to aggregate in a defined area. Earlier work by various researchers indicated that salmonids: (1) hear tones ranging from 10 Hz to between 500 Hz and 1 kHz, (2) respond to any unusual and intense acoustic phenomenon with a startle reaction that is away from the sound source, and become accustomed very rapidly to any unusual acoustic stimuli, (4) are not capable of being repelled or attracted through a natural response to acoustic phenomena, and (5) are capable of being conditioned to an acoustic stimulus.

In the present study, about 90% of the rainbow trout roaming freely in a large pond were conditioned to come to feed at the source of an underwater acoustic stimulus in about 45 trials. The acoustic stimulus was a 150-Hz pure tone that was broadcasted continuously during the period of from 1 min. before and throughout the feeding of the fish. The trout did not discriminate between the conditioning tone (150 Hz) and a 300-Hz tone produced in tests from the same sound source. [4 figures, 1 table, 23 references] FTP

3.15 PREFERENTIAL LOSS OF CONJUGATED CARBONYL COMPOUNDS IN COOKED PORK FAT BY γ-IRRADIATION

Morita, Makio, Makoto Tajima, and Masao Fujimaki (Department of Agricultural Chemistry, Faculty of Agriculture, University of Tokyo, Tokyo, Japan)
Agricultural and Biological Chemistry 35, No. 12, 1936-1942 (December 1971)

Earlier workers found volatile carbonyl compounds in irradiated meats and fats. In a previous study, the present authors reported [Agr. Biol. Chem. 34, 1859 (1970)] that they found 2-pentenal in the distillate from Vienna sausages (not-irradiated) but they did not find it in the distillate from irradiated Vienna sausage. In the present study, cooked pork fat was irradiated with γ-rays and the volatile carbonyl compounds were examined spectrophotometrically after they had been converted to 2,4-dinitrophenylhydrazones. The authors found that the main radiation-induced change in the carbonyls was a preferential loss of conjugated (α, β-unsaturated) carbonyls rather than novel formation of carbonyls. [2 figures, 7 tables, 12 references] FTP

3.15 AN INVESTIGATION OF THE POSSIBLE EFFECTS OF INGESTION OF RADIOACTIVE FISH AND OF THE NATURE AND BIOLOGY OF TOXINS FOUND IN CERTAIN FISHES

Banner, Albert H. (Hawaii Univ., Honolulu, Hawaii)
Final Report, June 26, 1958-October 31, 1970, Contract AT(04-3)-235, 10 pp. (Apr. 15, 1971)
Nuclear Science Abstracts 25, No. 16, 3890 (August 31, 1971)

3.237 FROZEN SHELLFISH PATTIES

Partyka, A. S.; Kraftco Corp. (pat.)
U.S. Patent 3,607,315
Food Technology 25, No. 12, 78 (1290) (December 1971)

Frozen particles of shellfish and flavoring materials are mixed. The mixture is then molded into portions. During the molding process, the mixture is maintained at a temperature below freezing. FTP

3.2493 OXIDATION OF PHOSPHOLIPIDS OF AQUATIC ANIMALS (4.21)

Hazama, Koichi (Fac. Fish., Hokkaido Univ., Hakodate, Japan)
Chemical Abstracts 74, No. 1, 1544v (Jan. 4, 1971)

3.2490 TECHNOLOGICAL ASPECTS OF PROCESSING OF EDIBLE MUSSELS, CLAMS, AND CRABS. I. SPOILAGE DURING ICE STORAGE

Chinnamma, P. L., D. R. Chaudhuri, and V. K. Pillai (Cent. Inst. Fish. Technol., Cochin, India)
Chemical Abstracts 74, No. 19, 98363w (May 10, 1971)

3.33 SEMI-AUTOMATIC RETORT CONTROL SYSTEMS (0.8)

Hughes, P. (Taylor Instrument Companies,(Europe) Ltd.)
Food Manufacture 46, No. 12, 32-33, 35, 47 (December 1971)

This is the second of two articles on retort processing. In the first article, published in the November issue of the journal, the author discussed various types of retort processing and the styles of retorts. In the present article, the author discusses semi-automatic control systems for retorts and he covers the following subject areas: Temperature control during "hold" period; Automatic timing of the "hold" period; Automatic venting; and Automatic pressure control during cooling. In addition, he discusses water processing systems and processing glass packs in steam. [6 figures] FTP

3.336 HELICAL-PUMP CAN STERILIZER

Rockwell, W. C., and D. F. Farkas (Western Regional Laboratory, U.S. Department of Agriculture, Berkeley, CA 94710)
Food Technology 25, No. 12, 38, 40, 43 (1250, 1252, 1255) (December 1971)

This article describes continuous can sterilization using a helical-pump hydrostatic system. [4 figures, 1 table, 2 references] FTP

3.19 (2,113) TESTING PAINTS WHICH ARE EFFECTIVE AGAINST MOULDS AND CAN BE USED IN THE PRODUCTION ROOMS AND STORES OF MEAT PROCESSING FACTORIES

Mintzlaff, H. J.
Fleischwirtschaft 51, No. 2, 191-195 (1971) (In German, English summary)
BFMIRA Abstracts 24, No. 6, Abstract No. 1815, 377 (June 1971)

Thirteen mould-inhibiting, commercially available paints were tested for their anti-mould activity in the laboratory and in a long-term experiment. The paints were also analysed for heavy metal content to ensure they were suitable for use in food factories. Six fungicidal paints were recommended as a result of these experiments. C.S.B. Reprinted

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3.332 LOSSES OF NITROGENOUS SUBSTANCES AND WATER SOLUBLE VITAMINS IN THE BLANCHING OF FISH

Andrusenko, P. I., and B. L. Nekhamkin (Kaliningrad Tekh. Inst. Rybn. Prom. Khoz., Kaliningrad, U.S.S.R.)
Chemical Abstracts 75, No. 1, 4156b (July 5, 1971)

3.2495 PRELIMINARY OBSERVATIONS ON CHANGES IN NUCLEOTIDES IN OIL SARDINE AND CERTAIN PENAEID PRAWNS DURING CHILL STORAGE

Cherian, Susamma, and M. Rajendranathan Nair (Cent. Inst. Fish. Technol., Ernakulam, India)
Chemical Abstracts 73, No. 7, 33947z (Aug. 16, 1970)

3.2495 CHANGE IN THE FREE AMINO ACID LEVEL IN FROZEN COD DURING LONG-TERM STORAGE

Vorob'eva, T. M., and E. Yu. Sukhanova (Zaochn. Inst. Sov. Torg., Moscow, U.S.S.R.)
Chemical Abstracts 75, No. 7, 47605q (Aug. 16, 1971)

3.2495 CHANGES IN MAJOR AND TRACE ELEMENTS IN FISH MUSCLES DURING STORAGE

Golovkin, N. A., and L. S. Kratnova (Leningrad Tekhnol. Inst. Kholod. Prom., Leningrad, U.S.S.R.)
Chemical Abstracts 74, No. 17, 86483x (Apr. 26, 1971)

3.2495 COMPARATIVE STUDIES ON DISC ELECTROPHORETIC ANALYSIS OF FISH MUSCLE PROTEINS IN STORAGE

Soon, Ihm In, Choi Hung Min, and Han Yang Il (Seoul Natl. Univ. Hosp., Seoul, S. Korea)
Chemical Abstracts 75, No. 1, 4145x (July 5, 1971)

3.15 (2.00) SPOILAGE UNITS OF RADURISED BOMBAY DUCK (HARPODON NEHEREUS)

Kumta, U. S., M. D. Alur, S. S. Mavinkurve, and N. F. Lewis (Bhabha Atomic Research Centre, Biochemistry and Food Technology Division, Bombay 85, India)
Journal of Food Science 36, No. 5, 831-832 (July-August 1971)

The authors found that the shelf life of radurized fishery products can be computed with sufficient accuracy using spoilage rates as determined by the equation of R. Spencer and C. R. Baines [Food Technology 18, 769 (1964)] taking a sensory score of 5 as a critical level of spoilage. They report evidence on the suppression of spoilage units in the fish Bombay duck exposed to a radurization dose of 0.1 Mrad. [1 figure, 13 references] FTP

3.15 IRRADIATION CLEAVAGE OF TRIMETHYLAMINE OXIDE IN FISH MUSCLE

Amano, Keishi, and Harumi Tozawa (Tokai Reg. Fish. Res. Lab., Min. Agr. Forest., Tokyo, Japan)
Chemical Abstracts 74, No. 1, 2739z (Jan. 4, 1971)

3.15 VOLATILE RADIOLYTIC COMPOUNDS IN IRRADIATED FISH

Barrera Pinero, Rosendo, and Sanchez Luis Gasco (Div. Quim. Nucl., Junta Energ. Nucl., Madrid, Spain)
Chemical Abstracts 76, No. 3, 12903d (Jan. 17, 1972)

3.4 (0.12) (1.0162) DESIGN, CONSTRUCTION AND ECONOMIC CONSIDERATIONS OF FISH DRY-SMOKING PLANT IN ZAMBIA

Cabrita, F. J., and K. Watanabe
Ministry of Lands and Natural Resources, Department of Wildlife, Fisheries and Natl. Parks, UN FAO Central Fisheries Research Institute, Zambia (1971)
World Fisheries Abstracts 22, No. 3, 37 (Abstract No. 22-3371) (July-September 1971)

This report describes the building and the operation of several small fish dry-smoking processing plants in Zambia and it indicates the most suitable designs for the local conditions. The report gives details on the construction of tanks, driers, smoking kilns, and other necessary equipment, and on the numbers of workers needed. It also contains a discussion of the economic aspects. [15 illustrations] (Abstract in WFA modified by FTP)

3.9 (3.5) HISTOLOGICAL AND BIOCHEMICAL STUDIES ON FECKEH

El-Dashlouty, M. S., T. M. Dessouki, S. Z. Saied, and Fawzia T. Shenooda (Dep. Hortic., Mintst. Agric., Cairo, U.A.R.)
Chemical Abstracts 74, No. 23, 123818h (June 7, 1971)

3.5 (0.38)(0.6) ROLE OF INTERNAL-ORGAN ENZYMES DURING AGING OF SALTED HERRING

Plotina, A., and A. P. Leonova (U.S.S.R.)
Chemical Abstracts 75, No. 15, 97357f (Oct. 11, 1971)

3.27 THAWING OF FROZEN FISH IN WATER

Hewitt, M. R.
Bulletin of the International Institute of Refrigeration, Li No. 1, 120-121 (1971)
World Fisheries Abstracts 22, No. 2, 35 (April-June 1971)

Blocks of sea-frozen whole cod (Gadus morhua) were thawed in humid air and in water at 15° to 21°C (59° to 70°F) in the laboratory to compare quality and weight gain. The quality of the fish after thawing was satisfactory with both methods and the yield on filleting was the same. In all cases the water thawed fish gained between 1 and 1.2 percent in weight, but there was no significant weight change in air-blast thawing. There was an appreciable difference in weight loss in the fillets stored in ice at chill temperatures, more or less corresponding to the difference in weight gain on thawing. Fillets from whole thawed fish lost 4.5 percent in 48 h, whereas fillets from air thawed fish lost 2.5 percent.

Following these tests, a pilot scale continuous water thawer was constructed. With blocks of cod, 107 × 50 × 10 cm thick, a water temperature of 18°C (65°F) and a period of immersion of 4 h were employed. This gave fish approximately 70 percent thawed which suited the factory processing arrangements where there was an overnight delay before filleting. The fillets compared favourably with fillets from fish thawed in a large air-blast thawer in the same factory and the yield was greater. The market weight gain and subsequent loss in the fillets observed in the laboratory were not encountered. Reprinted

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3.29 NUTRITION OF FROZEN FOODS

Takai, Yuriko, and Yukie Ikegami (Natl. Inst. Nutr., Tokyo, Japan)
Chemical Abstracts 76, No. 3, 12919p (Jan. 17, 1972)

3.61 SPIKED-PLATE FREEZE DRYING
(0.8)

Hatcher, John D., and J. Edward Sunderland (Department of Mechanical and Aerospace Engineering, North Carolina State University, Raleigh, NC 27607)
Journal of Food Science 36, No. 6, 899-905 (September-October 1971)

Some handling problems developed when attempts were made to use the spiked-plate freeze drying system of C. Brynko and W. R. Smithies [J. Sci. Food and Agri. 9, 576 (1958)] in existing freeze-drying equipment. The present study was carried out to develop a system that could be used with conventional freeze-drying equipment without modification of the freeze-drier. The authors studied, experimentally, the internal drying problem and developed a mathematical model to evaluate the effect of design parameters on drying rates.

With spiked plates, the overall freeze-drying times can be reduced by as much as 24 hr. A simplified mathematical model for predicting drying rates was developed from the experimental data and it will be useful to the designer of spiked-plate freeze-drying systems. Results obtained using the mathematical model indicated that spike diameter, spike spacing, and plate temperature have significant effect on drying rate, but sample thickness and spike material have no significant effect. [13 figures, 11 references] FTP

4.61 FOOD ANTIOXIDANTS AND THEIR INHIBITING EFFECT ON SALTED ATLANTIC HERRING FAT

Pechatina, V. I. (U.S.S.R.)
Chemical Abstracts 75, No. 15, 97374j (October 11, 1971)

4.5 EFFECT OF HEME COMPOUNDS ON LIPID OXIDATION

Hirano, Y., and H. S. Olcott (Institute of Marine Resources, University of California, Berkeley, CA 94720)
Journal of the American Oil Chemists' Society 48, No. 10, 523-524 (October 1971)

The effect of heme compounds on oxidation rates of linoleate emulsions was studied by use of a polarographic oxygen analyzer. The rate of oxidation of linoleate solutions was catalyzed by low levels of heme and heme-proteins and was inhibited by higher concentrations. High concentrations of heme compounds also inhibited lipoxygenase catalysis of linoleate oxidation. Salts of manganese and cobalt inhibited heme-catalyzed linoleate oxidation. The authors indicate that these combined effects may reflect the oxidative synthesis of antioxidants from heme compounds. [5 figures, 7 references] FTP

4.5 CATALYSTS OF LIPID PEROXIDATION IN MEATS

Kwoh, Theresa Liu (Department of Food and Nutrition, Florida State University, Tallahassee, FL 32306)
Journal of the American Oil Chemists' Society 48, No. 10, 550-555 (October 1971)

The nature of the iron complexes that catalyze lipid oxidation is not known. The identification and estimation of the activities of possible nonheme iron catalysts in meat may be a promising area for future research on lipid oxidation in meat. [1 figure, 10 tables, 29 references] FTP

4.19 COMPARISON OF THE FATTY ACID COMPOSITION OF DEPOT FATS FROM FRESH-WATER AND MARINE TURTLES

Ackman, R. G., S. N. Hooper (Halifax Laboratory, Fisheries Research Board of Canada, Halifax, Nova Scotia, Canada), and W. Frair (Biology Department, King's College, Briarcliff Manor, NY 10510)
Comparative Biochemistry and Physiology 40B, 931-944 (1971)

Data are given on the fatty acids of depot fats of three species of Atlantic marine turtles and six species of North American fresh-water turtles. The marine turtle Dermochelys coriacea was unique in that its depot fats had 9.5% lauric acid, possibly replacing palmitic acid. Only the marine species contained trans-6-hexadecenoic acid. The fresh-water species Dermatemys mawi could be differentiated from the other fresh-water turtles by its fatty acid composition (indicative of a herbivorous diet).
[4 tables, 25 references] FTP

4.15 DOCOSAHEXAENOIC ACID OF MARINE ORGANISMS

Hinchliffe, P. R., and J. P. Riley (Dep. Oceanogr., Univ. Liverpool, Liverpool, England)
Chemical Abstracts 75, No. 21, 127149j (November 22, 1971)

4.5 METAL-CATALYZED OXIDATION IN THE PRESENCE OF WATER IN FOODS

Labuza, T. P., M. Silver, M. Cohn, N. D. Heidelbaugh, and M. Karel (Department of Nutrition and Food Science, Massachusetts Institute of Technology, Cambridge, MA 02139)
Journal of the American Oil Chemists' Society 48, No. 10, 527-531 (October 1971)

This paper reports on the effect of water on metal-catalyzed lipid oxidation. Model systems were used in which methyl linoleate was oxidized in systems consisting of either cellulose or casein with which the lipid was dispersed with water containing cobalt salts.

At low moisture contents, water acts as an antioxidant (through its hydration of metalic catalysts). As the water content increases, the water promotes oxidation (through its solvent activity). Further, in the region of capillary condensation, the antioxidant effect of hydration of metalic catalysts is overshadowed by the prooxidant effect of solubilization of the metalic catalysts. Water soluble chelating agents (EDTA) act on the metals in aqueous solutions and the activity of the metals is promoted by increased moisture content.
[8 figures, 3 tables, 18 references] FTP

4.5 IDENTIFICATION OF METHYL 4-OXOBUTANOATE FROM THE AUTOXIDATION OF METHYL DOCOSAHEXAENOATE

Noble, Ann C., and W. W. Nawar (Dep. Food Sci. Technol., Univ. Massachusetts, Amherst, Mass.)
Chemical Abstracts 75, No. 25, 150582d (Dec. 20, 1971)

4.5 THE AUTOXIDATION OF HIGHLY UNSATURATED FATTY ACIDS: METHYL 4,7,10,13,16,19-DOCOSAHEXAENOATE

Noble, Ann C., and W. W. Nawar (Department of Food Science and Technology, University of Massachusetts, Amherst, MA 01002)
Journal of the American Oil Chemists' Society 48, No. 12, 800-803 (December 1971)

The oxidation of highly unsaturated fatty acids is more rapid and more complicated than that of the mono- or diunsaturated acids. In this study, the researchers used methyl docosahexaenoate as a model system for a study of the autoxidation of highly unsaturated fatty acids. The methyl docosahexaenoate was oxidized at 50° C. for 28 hr., and the volatiles were collected by high vacuum distillation and fractionated by gas chromatography. The following compounds were identified:
Aldehyde esters: 3-formyl methyl propanoate (C4:0); 4-formyl methyl butanoate (C5:0); 6-formyl methyl 4-hexenoate (C7:1); 5-formyl methyl 4-pentenoate (C6:1); 7-formyl methyl 4,6-heptadienoate (C8:2); 9-formyl methyl nonadienoate (C10:2); 12-formyl methyl dodecatrienoate (C13:3).
Aliphatic aldehydes: propanal, hexanal, 3-hexenal; 2,4-heptadienal; 3,6-nonadienal; 2,4-decadienal; decatrienal; 3,6,9-dodecatrienal,tridecatetraenal; 3,6,9,12-pentadecatetraenal.
Methyl esters: methyl propanoate; methyl 4-hexenoate; methyl nonadienoate; methyl dodecatrienoate; methyl pentadecatetraenoate; methyl hexadecatetraenoate.
Hydrocarbons: Straight chain and cyclic hydrocarbon compounds were present. Three aliphatic hydrocarbon compounds identified were n-octadiene, n-undecatriene, and n-tetradecatetraene. The spectra of the C11:3 and C14:4 hydrocarbons were similar to those of trienes and tetraenes identified earlier in irradiated fats [M. F. Dubravcic and W. W. Nawar, JAOCS 45, 656 (1968)]
[2 figures, 16 references] FTP

4.5 COPPER(I) AND COPPER(II) COMPLEXES IN SOLUTION AND THE CRYSTALLINE STATE

Osterberg, R., and B. Sjoberg (Department of Medical Biochemistry, University of Göteborg, S-400 33 Göteborg, Sweden)
Journal of the American Oil Chemists' Society 48, No. 10, 525-526 (October 1971)

Copper is involved in the development of oxidation defects in fat-containing food products. The copper ions in foodstuffs bound in the form of complexes to nitrogen, oxygen, and sulfur ligand atoms seem to catalyze the oxidation of lipids. The authors are investigating the copper complexes of a series of low molecular weight compounds intended as models for copper protein interaction. The present paper reports on model studies on the copper-protein interaction that may catalyze lipid oxidation using the copper complexes of glycyl-L-histidylglycine and ε-aminocaproic acid. The compositions of the complexes in solution were measured by emf methods; the structures of the solid complexes were determined by X-ray diffraction techniques. The authors indicate that all the solid complexes have their counterparts by species formed in solution.
[6 figures, 5 references] FTP

4.12 WIDE-LINE NMR SPECTRA OF SOME SATURATED AND UNSATURATED LONG CHAIN FATTY ACIDS

Bailey, August V., and Robert A. Pittman (Southern Regional Research Laboratory, ARS, U.S. Department of Agriculture, New Orleans, LA 70119)
Journal of the American Oil Chemists' Society 48, No. 2, 775-777 (December 1971)

This article reports wide-line NMR spectra of a series of long chain fatty acids (decanoic, lauric, myristic, palmitic, stearic, and behenic acids) and of three isostructural unsaturated acids (elaidic, trans-5-eicosenoic, and brassidic acids), including NMR spectra of metastable forms of both the saturated and the unsaturated acids. Apparently, NMR parameters are correlated with carbon chain length, crystal spacing, and density. Also, the polymorphic forms are distinguished on the basis of line width and second movement difference.
[4 figures, 8 references] FTP

4.5 LIPID OXIDATION IN MEAT AND MEAT PRODUCTS--A REVIEW

Love, Jane D., and A. M. Pearson (Food Science Department, Michigan State University, East Lansing, MI 48823)
Journal of the American Oil Chemists' Society 48, No. 10, 547-549 (October 1971)

Undesirable changes in the quality of meat and meat products occur as their lipids oxidize and interact with other meat components (pigments and other proteins, carbohydrates, vitamins). Oxidation occurs in the triglycerides and the phospholipids. Ferric heme pigments are major prooxidants in tissue lipid oxidation. Nonheme iron and ascorbic acid may function as prooxidants in meat. Sodium chloride accelerates the oxidation of triglycerides but the nature of the mechanism is not fully understood. [32 references] FTP

4.61 ANTIOXIDANT

Hoffmann-La Roche & Co. A.G. (pat.)
Japanese Patent 16937/71
Food Technology 25, No. 11, 114 (November 1971)

Antioxidant for food consists of a mixture of ingredients. FTP

4.5 CALCIUM REQUIREMENT FOR LIPOXYGENASE CATALYZED LINOLEATE OXIDATION

Koch, R. B., Bradford L. Brumfiel, and Mary N. Brumfiel (Honeywell Research Center, Hopkins, MN 55343)
Journal of the American Oil Chemists' Society 48, No. 10, 532-538 (October 1971)

The purpose of this study was to further investigate the Ca^{2+} activation of navy bean lipoxygenase and to determine the specificity of calcium for this enzyme activation. This work gives additional evidence that a lipoxygenase does exist that requires the presence of a divalent cation for its activity.
[6 figures, 4 tables, 21 references] FTP

4.12 THE PHASES OF SATURATED 1-MONOGLYCERIDES C_{14}-C_{22}

Lutton, E. S. (Miami Valley Laboratories, Procter & Gamble Co., Cincinnati, OH 45239)
Journal of the American Oil Chemists' Society 48, No. 2, 778-781 (December 1971)

The author reports on the phase behavior of a homologous series of saturated even 1-monoglycerides (monomyristin, monopalmitin, monostearin, monoarachidin, monobehenin). [5 figures, 4 tables, 4 references] FTP

4.6 (4.5)(7.8) TISSUE ANTIOXIDANT EFFECT OF OCEAN HAKE FISH AND FERMENTED SOYBEAN (TEMPEH) AS PROTEIN SOURCES IN RATS

Chen, Linda H., L. V. Packett, and Insun Yun (Department of Nutrition and Food Science, University of Kentucky, Lexington, KY 40506)
Journal of Nutrition 102, No. 2, 181-195 (February 1972)

The use of tempeh (fermented soybean) to produce a stable, nutritious fish-protein supplement through prevention of lipid autoxidation by the natural antioxidant and as a tissue antioxidant was investigated. Freeze-dried ocean hake fish was mixed with tempeh or soybean. Soybean, tempeh, fish or fish-soybean and fish-tempeh mixtures were used as the sole protein source in diets with or without vitamin E added. Rats were fed 4 weeks, killed and the antioxidant status of the liver, spleen and kidney was determined by using thiobarbituric acid (TBA) assay. Dietary vitamin E reduced TBA values in the liver, kidney and spleen by factors of 11.1, 1.1 and 4.6, respectively. Tempeh did not alter tissue antioxidant status even though earlier studies proved it to contain a potent natural antioxidant. Fish-tempeh or fish-soybean combinations acted synergistically in reducing liver TBA values ($P < 0.01$) below fish, tempeh or soybean alone. Of the tissues tested, liver was the preferred organ for TBA analysis.
[3 tables, 13 references] Authors' abstract

6.132 (0.5) SANITATION GUIDELINES FOR THE CONTROL OF 'SALMONELLA' IN THE PRODUCTION OF FISH MEAL

Garrett, E. Spencer, and Richard Hamilton (National Marine Fisheries Service, Exploratory Fishing and Gear Research Base, Pascagoula, MS 39567)
NOAA-TR-NMFS-CIRC 354, 12 pp. (October 1971) Available from the Government Printing Office, Washington, DC 20402, Stock No. 0320-0023, C55.13:NMFS-CIRC-354; price $0.25.
Government Research Announcements 71, No. 23, 52 (Dec. 10, 1971)

A detailed description of the scope and magnitude of the Salmonella problem as it relates to the manufacture of fish meal is discussed. Specific control steps and procedures are outlined which, if followed, should keep Salmonella contamination to a minimum in fish reduction plants. Reprinted

4.61 STUDIES ON THE SHELLFISH PROCESSING. VI. EFFECT OF EDTA AND BHA IN COLOR PRESERVATION OF CANNED SURF CLAM MEAT

Lee, Eung Ho, Jong Wha Hur, Bong Ho Han, Yong Gun Kim, and Yeung Ho Park
Bull. Kor. Fish. Soc. 4, No. 1, 17-21 (1971)
Korean Scientific Abstracts 3, No. 5, 154-155 (Abstract No. 71/530) (October 1971) (Korea Scientific and Technological Information Center, 206-9 Cheongryangri-dong, Dongdaimun-ku, I.P.O. Box 1229, Seoul, Korea)

The authors found that pretreatment of surf clam meat with EDTA or BHA helped preserve the color of the canned meat.
[Original article contains 1 figure, 1 table, 13 references. In Korean] FTP

6.133 OIL EXTRACTION FROM VEGETABLE AND FISH SOURCES

Pike, Marshall, and Alan W. Routledge (Albright and Wilson Ltd. and Harrisons and Crosfield Ltd.) (pat.)
South African Patent 6,598 (March 30, 1971)
Chemical Abstracts 76, No. 3, 12968d (Jan. 17, 1972)

6.31 (9.16) CULTURE OF SEA WEEDS

Imata, Katsu, and Yuichi Saito (Kyowa Fermentation Industry Co., Ltd.) (pat.)
Japanese Patent 2376/71 (Jan. 21, 1971)
Chemical Abstracts 75, No. 19, 116003f (Nov. 8, 1971)

6.31 (9.16) SEA WEEDS WITH HIGH PROTEIN CONTENTS

Ohoka, Tadaaki, Ryoji Kohira, Masayuki Mizuno, Takaji Kawano (Asahi Chemical Industry Co., Ltd.)
Chemical Abstracts 75, No. 19, 116002e (November 8, 1971)

4.61 RETARDATION OF OXIDATIVE COLOR CHANGES IN RAW GROUND BEEF

Greene, Barbara E., In-May Hsin, and Marelynn W. Zipser (Department of Food Science and Nutrition, Colorado State University, Fort Collins, CO 80521)
Journal of Food Science 36, No. 6, 940-942 (September-October 1971)

Ascorbic acid plus either butylated hydroxyanisole (BHT) or propyl gallate when added to raw ground beef effectively retarded lipid and pigment oxidation in the beef (packed in oxygen-permeable film) for up to 8 days of refrigerator storage (3° to 5° C.). The additives did not appear to mask the bacterial spoilage of the ground beef. [1 figure, 2 tables, 15 references] FTP

6.132 (0.5) SANITATION GUIDELINES FOR THE CONTROL OF 'SALMONELLA' IN THE PRODUCTION OF FISH MEAL

Garrett, E. Spencer, and Richard Hamilton (National Marine Fisheries Service, Exploratory Fishing and Gear Research Base, Pascagoula, MS 39567)
NOAA-TR-NMFS-CIRC 354, 12 pp. (October 1971) Available from the Government Printing Office, Washington, DC 20402, Stock No. 0320-0023, C55.13:NMFS-CIRC-354; price $0.25.
Government Research Announcements 71, No. 23, 52 (Dec. 10, 1971)

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Chemical Abstracts 75, No. 19, 116003f (Nov. 8, 1971)

6.31 (9.16) SEA WEEDS WITH HIGH PROTEIN CONTENTS

Ohoka, Tadaaki, Ryoji Kohira, Masayuki Mizuno, Takaji Kawano (Asahi Chemical Industry Co., Ltd.)
Chemical Abstracts 75, No. 19, 116002e (November 8, 1971)

6.199 (9.3) NEW CONTROLS OVER ANTIBIOTICS (IN ANIMAL FEEDS) COME INTO EFFECT IN U.K. AND COMMON MARKET

Bird, D.
Wld Feeds No. 2, 15-19 (1971)
RFMIRA Abstracts 24, No. 6, Abstract No. 1858, 384 (June 1971)

The recommendations of the Swann Committee are summarized and discussed. Current regulations controlling the use of 16 most commonly used antibiotics in the U.K. and E.E.C. are given in tabular form. L.P. Reprinted

4.61 ANTIOXIDANT POTENTIAL OF TEMPEH AS COMPARED TO TOCOPHEROL

Packett, Leonard V., Linda H. Chen, and Jean Y. Liu (Department of Nutrition and Food Science, University of Kentucky, Lexington, KY 40506)
Journal of Food Science 36, No. 5, 798-799 (July-August 1971)

Tempeh is a popular food in Indonesia and it is produced by fermenting soybeans with a species of Rhizopus mold. The lipids of tempeh are probably preserved by the presence of the antioxidants jenistin, diazein, and 6,7,4′-trihydroxyisoflavone, (they are presumed to exist in the inactive form in soybeans). The authors thought that because tempeh contains these naturally occurring antioxidants, tempeh might be useful for mixing with other food products that contain unstable, highly unsaturated, fatty acids. This technique might, therefore, be applied in the preservation of foods in developing countries.

Tocopherol-stripped corn oil was used. Tempeh, at the 25% and 50% concentration level, was mixed with the corn oil. Straight corn oil was used as the control sample; corn oil containing 0.01% and corn oil containing 0.03% α-tocopherol were used for comparative test samples. The samples were incubated at 37° C. for 6 weeks.

The results demonstrated that tempeh, when mixed with corn oil, does inhibit lipid oxidation. Corn oil containing 50% tempeh showed higher antioxidant potential than did corn oil containing 25% tempeh, 0.01% α-tocopherol, or 0.03% α-tocopherol. On the basis of these results, the authors suggest that tempeh might be suitable for mixing with other foods that contain unstable lipids.
[1 table, 6 references] FTP

4.60 (0.39) ELECTRON SPIN RESONANCE OF CHROMANOXY FREE RADICALS FROM α-, ζ_2-, β-, γ-, δ-TOCOPHEROL AND TOCOL

Boguth, W. (F. Hoffmann-La Roche and Co. Ltd., Basle, Switzerland), and H. Niemann (Institute of Biochemistry and Endrocrinology, University of Giessen, Giessen, Germany)
Biochimica et Biophysica Acta, Lipids and Lipid Metabolism 248, No. 1, 121-130 (October 5, 1971)

This paper presents a complete series of ESR spectra of chromanoxy-type radicals from α-, ζ_2-, β-, γ-, δ-tocopherol and some model substances.
[3 figures, 2 tables, 22 references] FTP

4.61 STUDIES ON THE SHELLFISH PROCESSING VII. EFFECT OF ANTIOXIDANTS OF EDTA TREATMENT ON THE QUALITY OF PRESSED-AND-DEHYDRATED SEA MUSSEL MYTILUS EDULIS

Hur, Jong Wha, and Eung Ho Lee
Bull. Kor. Fish. Soc. 4, No. 1, 22-30 (1971)
Korean Scientific Abstracts 3, No. 5, 157 (Abstract No. 71/539) (October 1971)

Treatment of a pressed and dehydrated sea mussel with certain antioxidants helped preserve the color of the product. The most effective chemical was BHT, followed in decreasing order of effectiveness by Tenox-II, and NDGA. EDTA was not effective in preserving color of the product. [Original article has 6 figures, 6 tables, 13 references. In Korean] FTP

6.135 A LOW-PRICE SYSTEM FOR REDUCING MEAL PLANT ODOURS

Anonymous
Fishing News International 10, No. 12, 14-15, 17 (December 1971)

The description of the new system for reducing fishmeal plant odors is described in this article by G. M. Dreosti (scientific and technical advisor to the Southern African inshore fishing industry) and C. B. Sampson (Engineer for Ovenstone S. W. Ltd.). The scrubber described is based on a system designed earlier by the Fishing Industry Research Institute, but does not use chlorine gas for oxidizing residual odors. [2 figures] FTP

6.15 (6.59) BLEACHING OF FISH MEAT PRODUCTS WITH WATER. III. RECOVERY OF PROTEINS FROM THE DRAIN PRODUCED IN THE MANUFACTURING OF FROZEN FISH MEAT PASTE

Oshima, Hiroshi, and Takayoshi Kawashima (Wakkanai Fish. Exp. Stn., Wakkanai, Japan)
Chemical Abstracts 74, No. 23, 123813c (June 7, 1971)

6.15 LIQUIFIED FISH PROTEIN. IV. EXAMINATION OF PROCESSING CONDITIONS FOR INDUSTRIAL PRODUCTION

Iseki, Shigeo, Takehiko Watanabe, Toyosuke Kinumaki (Tokai Reg. Fish. Res. Lab., Tokyo, Japan)
Chemical Abstracts 74, No. 19, 98377d (May 10, 1971)

4.62 ANTIOXIDANT

Kyowa Hakko Kogyo Co. Ltd. (pat.)
Japanese Patent 16504/71
Food Technology 25, No. 11, 114 (November 1971)

Dihydrocoumaric acid is used as an antioxidant for fats and oils. FTP

4.90 (1.23) COMPARATIVE INTERACTION AND DEPOSITION OF ω3 AND ω6 FATTY ACIDS IN CHICK BRAIN

Miller, David, Joseph H. Soares, Jr., Susan Cuppett, and Virginia White (NOAA, National Marine Fisheries Service, National Center for Fish Protein Concentrate, College Park, Md. 20740)
Nutrition Reports International 4, No. 1, 19-30 (July 1971)
NOAA Publications Announcement No. 71-17, 6, Item 71-17-16-06 (October 1971)

This study was undertaken to determine comparatively the dietary effect of safflower and menhaden oils on the degree of interaction and deposition of ω3 and ω6 fatty acids in the brains of growing chicks. The main fatty acids as indicated by gas-liquid chromatography analyses of the lipids in the brains of 1-day-old unfed chicks (obtained from a commercial hatchery) were 16:0, 18:0, 22:6ω3, 18:1ω9 and 20:4ω6. The content of each of these fatty acids ranged from 13 to 19 percent. Less prevalent were 22:4ω6 and 22:5ω6 (each about 5 percent). Three fatty acids of somewhat lower content (1-2 percent) consisted of 18:2ω6, 20:5ω3 and 22:5ω3. Feeding safflower oil depressed the content of 22:6ω3 in the chick brain, whereas menhaden oil elevated the content of this fatty acid substantially and at the same time severely depressed the deposition of the ω6 fatty acids. (Author) Reprinted

6.54 [DEVELOPMENT OF NEW FISH PROTEIN CONCENTRATES IN ARGENTINA. II. SOLUBILITY AND FRACTIONATION OF PROTEINS]
ENTWICKLUNG NEUER FISCHMEHLE IN ARGENTINIEN II. LÖSLICHKEIT UND FRAKTIONIEURUNG DER PROTEINE

Sotorres, A. M., and H. Hörmann (Max-Planck-Institut für Eiweiss- und Lederforschung, München und der Universidad Nacional del Sur, Bahía Blanca, Argentinien)
Archiv für Fischereiwissenschaft 22, No. 3, 280-286 (December 1971) (In German; summary in English)

The solubilities of the fish protein concentrates prepared from five species of fish in various solvents are shown in the following table:

Solvent	Solubilities of the various fish protein concentrates in percent dissolved				
	Mustelus fasciatus	Raja platana	Cynoscion striatus	Micropogon barretoi	Merluccius merluccius
Water	-	-	-	-	-
0.25M NaCl	7.3	6.7	5.6	3.5	5.3
4M urea	23.4	22	22.8	20	21.5
0.1% Na-dodecylsulfate	29.2	29.4	28.8	27.6	36.6

(over)

6.54 DEHYDRATED PROTEIN-FORTIFIED FRUIT JUICES

Salunke, D. K. (Utah State University, Logan, UT 84321), and H. R. Bolin (Western Marketing and Nutrition Division, ARS, U.S. Department of Agriculture, Albany, CA 94710)
Food Product Development 6, No. 1, 84, 86 (February-March 1972)

A foam-mat drying method developed by the U.S. Department of Agriculture's Western Utilization Research Laboratory was used to prepare dehydrated protein-fortified fruit juices.

Juice, protein, and methyl cellulose combinations were whipped together for 5 min. The foam that resulted was spread 1-millimeter thick on trays and then the film was dehydrated by heating it at 160° F. for 25 min. The dried material was removed and ground to pass through a six-mesh screen and packaged. All operations after the film was dried were carried out in a room with relative humidity below 10%. The powder was packaged in cans sealed under ½-atmosphere pressure. The moisture content of the powder was about 2%. The protein product used contained 62% protein. Products were prepared from apple juice, peach nectar, and cherry juice. Data on the formulation of high protein apple juice is shown in the following table:

(over)

6.69 ULTIMOBRANCHIAL CALCITONIN WITH DIURETIC ACTIVITY RELATIVE TO SODIUM AND WATER

Aldred, John P., James W. Bastian, and Richard R. Kleszynski (Armour Pharmaceutical Co.)
German Offen. [Patent] 2,118,626 (Oct. 28, 1971)
Chemical Abstracts 76, No. 4, 17798h (Jan. 24, 1972)

6.69 CHITIN-CONTAINING WOUND-HEALING COMPOSITIONS

Balassa, Leslie L.
British Patent 1,252,373 (Nov. 3, 1971)
Chemical Abstracts 76, No. 4, 17797g (Jan. 24, 1972)

6.79 IMPROVEMENTS IN OR RELATING TO PROCESSES FOR THE PURIFICATION OF WASTE EFFLUENT

Tasman Vaccine Laboratories Ltd. (New Zealand) (pat.)
British Patent 1,227,906
BFMIRA Abstracts 24, No. 6, Abstract No. 1873, 386 (June 1971)

The process aims to cut down pollution caused by effluent from abbatoirs, meat works, etc., and to provide a means of reclaiming the proteins and other metabolic products contained in such effluent. According to the present method the effluent passes through a bed of particulate ion exchange material, usually regenerated cellulose, to remove the major portion of proteins and fats. The ion exchange material is then regenerated, and the two steps of the process are alternated. Reprinted

6.37 CHLORELLA BEVERAGE

Urano, T. (pat.)
Japanese Patent 17945/71
Food Technology 25, No. 11, 116 (November 1971)

The process involves autolysis of the Chlorella with protease of Bacillus natto, and the addition of sugar and treatment with lactic acid bacteria. FTP

6.82 PROCESS FOR CLEANING SHELLS OF MARINE CREATURES

Fehmerling, Gottlieb Bernhard; assignor to Ocean Research Corp., Bridgeton, NJ 08302 (pat.)
U.S. Patent 3,622,379 (November 23, 1971)

This invention deals with the production of a clean shell of a marine creature (clams, oysters, scallops, ...) that can be used as a food container or decorative article. FTP

6.54 FISH PASTE PRODUCT
(3.11)

Zenkoku Kamaboko Suisan Kakokoyo Kyodo Kumiai Rengokai (pat.)
Japanese Patent 18588/71
Food Technology 25, No. 11, 118 (November 1971)

The fish meat is minced in an aqueous bleaching composition containing a nonionic surfactant. FTP

6.54 FISH PROTEIN CONCENTRATES

Spinelli, J.; U.S. Department of the Interior (pat.)
U.S. Patent 3,598,606
Food Technology 25, No. 12, 77 (1289) (December 1971)

The fish material is treated with an acidic solution of a condensed inorganic phosphate (such as hexametaphosphate) to insolubilize the protein fractions. FTP

6.54

Desired protein content of juice	Ingredient			Total amount of juice obtained
	Juice powder	Solubilized soya protein1/	Water	
percent	grams	grams	grams	grams
0	1.0	--	7.30	8.30
5	1.0	0.73	7.30	9.03
10	1.0	1.59	7.30	9.89

1/ Contains 62% protein.
[1 illustration, 2 tables]

FTP

6.54 NUTRITIONAL VALUE OF HERRING BUTTER
(1.22)

Wartenberg, Lech, and Barbara Trebusiewicz (Wydz. Weter., Wyzsza Szk. Roln., Wroclaw, Poland)
Chemical Abstracts 74, No. 17, 84745k (April 26, 1971)

6.54 AMINO ACID SPECTRA OF FISH PROTEIN CONCENTRATES
(7.84)(6.139) AS A FUNCTION OF PROCESSING

Rahman, Muhamad A. (Texas A&M Univ., College Station, Tex.)
Chemical Abstracts 75, No. 9, 62298k (August 30, 1971)

The fish protein concentrates had similar amino-acid compositions, and the proteins seemed to be made of peptide chains very much alike in molecular weight. However, the electrophoretic behavior of the proteins seemed to indicate the existence of different molecular aggregations.
[4 figures, 4 tables, 5 references] [Authors' abstract modified by FTP

6.197 PHOSPHORUS AND CALCIUM IN FISH MEAL FEED

Egorova, L. N., and L. R. Kopylenko (U.S.S.R.)
Chemical Abstracts 74, No. 9, 41247g (March 1, 1971)

6.18 SOLUBILIZATION OF IRON IN A CALCAREOUS SOIL
(6.36) BY PRODUCTS OF BACTERIAL (MICROBIAL) DEGRADATION OF SEAWEED AND FISH FLOUR (MEAL)

Dabike, Gonzalez Monica
Chemical Abstracts 73, No. 1, 3058c (July 6, 1970)

6.32 FUCOSE-CONTAINING POLYSACCHARIDES IN ASCOPHYLLUM NODOSUM

Larsen, Bjoern, and Arne Haug (Norw. Inst. Seaweed Res., Norges Tek. Noegsk, Trondheim, Norway)
Chemical Abstracts 74, No. 7, 28854h (Feb. 15, 1971)

6.32 SEASONAL VARIATIONS IN GROWTH, ALGINIC ACID, AND MANNITOL CONTENTS OF SARGASSUM WIGHTII AND TURBINARIA CONOIDES FROM THE GULF OF MANNAR, INDIA

Rao, M. Umamaheswara (Cent. Mar. Fish. Res. Inst., Mandapam Camp, India)
Chemical Abstracts 74, No. 7, 28857m (Feb. 15, 1971)

6.32 DEGREE OF POLYMERIZATION AND POLYDISPERSITY OF MANNAN AND XYLAN IN SIPHONEOUS GREEN ALGAE

Mackie, William, and D. B. Sellen (Astbury Dep. Biophys., Univ. Leeds, Leeds, England)
Chemical Abstracts 74, No. 7, 28855j (Feb. 15, 1971)

6.54

7.0 (4.5) ACTIVATION ANALYSIS OF TRACE ELEMENTS IN LIPIDS WITH EMPHASIS ON MARINE OILS

Lunde, Gulbrand (Central Institute for Industrial Research, Forskningsvn. 1, Oslo 3, Norway)
Journal of the American Oil Chemists' Society 48, No. 10, 517-522 (October 1971)

The author gives a brief introduction to activation analysis and describes some of the main features of the method as applied to biological materials. The distribution of trace elements in oils was examined by use of autoradiography and γ-spectroscopy. Oils relatively high in phospholipids have a more homogeneous distribution of trace elements than do oils low in phospholipids. In concluding the article, the author suggests that when studying the effect of trace elements on the autoxidation of oils, more emphasis should be given to the distribution of these trace elements and on how this distribution is influenced by the content of phospholipids and probably also of the content of small amounts of water in the oils. [6 figures, 3 tables, 6 references] FTP

7.51 FURTHER STUDIES ON THE EFFECT OF AMINO ACID SUPPLEMENTATION ON THE URINARY NITROGEN COMPOUNDS IN RATS FED A LOW-CASEIN DIET

Kiriyama, Shuhachi, Tomoko Suzuki, and Hiroyuki Iwao (National Institute of Nutrition, 1 Toyamacho, Shinjuku-ku, Tokyo, Japan)
Agricultural and Biological Chemistry 35, No. 12, 1844-1851 (Dec. 1971)

In earlier work on the evaluation of the quality of dietary protein, the senior author and coworkers found that the ratio of urinary allantoin (A) to urea (U) multiplied by protein intake (I_p) [A/U · I] changes in proportion to the dietary amino-acid balance, and further they found that this method of evaluating protein quality was more sensitive than that based on the growth rate or nitrogen balance. The purpose of the present study was to obtain information on the change in urinary nitrogen compounds in rats fed an "imbalanced" or a "corrected" diet, particularly in relation to the effect of the nature of the dietary source of carbohydrate. In the earlier experiments pregelatinized starch was used as the dietary source of carbohydrate; in the present experiments sucrose or an equimolar mixture of glucose and fructose was used as the dietary source of carbohydrate. The rats were fed an 8% casein basal diet supplemented with 0.3% DL-methionine or 0.3% DL-methionine plus 0.36% DL-threonine or 0.18% L-threonine. Observations were made of the changes in urinary excretion of urea and allantoin and for body weight gain and percent nitrogen retention. The researchers indicated that differences in nitrogen utilization by the rats (as expressed by growth rate or percent nitrogen balance) became significant by the addition of 0.3% methionine to the basal diet, and it was further increased by the simultaneous supplementation with 0.36% DL-threonine or 0.18% L-threonine. The authors suggest

(over)

7.42 SIMPLE AND VERSATILE ATOMIC FLUORESCENCE SYSTEM FOR DETERMINATION OF NANOGRAM QUANTITIES OF MERCURY

Muscat, V. I., T. J. Vickers, and Anders Andren (Florida State University, Tallahassee, FL 32303)
Analytical Chemistry 44, No. 2, 218-221 (February 1972)

This paper reports on a flameless atomic fluorescence system for mercury that makes use of either reduction-aeration or combustion techniques for the generation of mercury vapor and a silver amalgamator for collection of mercury prior to final measurement. The system can determine mercury in samples containing as little as 0.6 ng. of Hg. Data are given on the application of the system to the determination of mercury in rock, water, wheat flour, and natural sediments.
[4 figures, 1 table, 13 references] FTP

7.8 (8.8)(9.19) TRACE ELEMENTS AND COMPOUNDS IN WATERS

Taylor, Floyd B. (Division of Water Hygiene, Environmental Protection Agency, Boston, Mass.)
Journal of the American Water Works Association 63, No. 1, 728-733 (November 1971)

The author discusses the chemical constituents of drinking water from the standpoints of limits of standards and occurrence in U.S. water supplies. Three tables are given: (1) Number of water supply and distribution samples where average delivered water exceeded specific constituent levels, (2) Health and aesthetic significance of trace elements and compounds and their occurrence in U.S. water supplies, (3) Health and aesthetic significance of trace elements and compounds in finished drinking water.
[5 illustrations, 3 tables, 5 references] FTP

7.599 SOME STUDIES ON THE PHOTOLYTIC DECOMPOSITION STAGE IN THE ESTIMATION OF N-NITROSAMINES

Burns, D. Thorburn, and Geraldine V. Allinson (Department of Chemistry, University of Technology, Loughborough, Leics., England)
Journal of Food Technology 6, No. 4, 433-438 (December 1971)

N-nitrosamines may be produced by chemical and bacterial action on secondary amines in the presence of nitrates; hence they may present a hazard with foods containing amines and nitrates. A recent method for estimating the concentration of nitrosamines involves the differential polarography of sample solutions before and after photolysis--the nitrosamine concentration in the presence of light-stable contaminants is estimated by difference [C. L. Walters, E. M. Johnson, and N. Ray, Analyst 95, 485 (1970)]. The purpose of the present study was to determine the conditions that affect the rates of photolysis of nitrosamines in order to specify more precisely analytical procedures, prior to the final polarographic of spectrophotometric measurement. The effects of pH and of buffer compositions were examined.

The photolytic decomposition of N-nitrosamines follows first order kinetics under most conditions. Reaction half lifetimes for the photolytic decomposition of N-nitrosamines are given.
[2 tables, 21 references] FTP

7.463 SIMPLE, RAPID POTENTIOMETRIC METHOD FOR THE ESTIMATION OF FLUORIDE IN VEGETATION

Chemical Abstracts 74, No. 21, 107993E (May 24, 1971)

Jacobson, Jay S., and Laurence I. Heller (Boyce Thompson Inst. Plant Res., Yonkers, N.Y.)

7.1 IMPROVED FLOW RATES WITH POROUS SEPHADEX GELS

Sachs, David H. (Laboratory of Chemical Biology, National Institute of Arthritis and Metabolic Diseases, National Institutes of Health, Bethesda, MD 20014), and Elizabeth Painter (Transplantation Unit, General Surgical Services, Massachussets General Hospital, Boston, MA 02114)
Science 175, No. 4023, 781-782 (February 18, 1972)

Described in this article is a simple modification of column design that greatly increases the maximum flow rates obtainable on porous Sephadex gels without significantly impairing the resolution. This modification consists of an internal support of siliconized glass beads (6 mm. in diameter). With this modification, the gel can withstand greater operating pressures without being compressed. Thus, this "bead column" operates in a manner similar to a series of short columns linked end to end. The method may, therefore, be used when rapid separations on Sephadex are required.
[3 figures, 5 references] FTP

7.81 DETERMINATION OF THE AMMONIA CONTENT OF FISH AS AN OBJECTIVE QUALITY ASSESSMENT METHOD

Vyncke, W. (Rijksstation voor Zeevisserij, Stadhuis, Oostende, Belgium)
Mededlingen Fakultetit Landbouw-Wetenschappen Gent 35, No. 4, 1033-1046 (1970)

During spoilage of fish, ammonia is one of the many volatile nitrogen bases that are formed. Ammonia can be formed through various reactions such as (1) conversion of urea to carbon dioxide and ammonia by means of bacterial urease; (2) degradation of nucleic bases to ammonia through a series of reactions involving ATP-ase, Myokinase, and AMP-deaminase; (3) oxidation of amines by bacterial amino-oxidases leading to the formation of ammonia; and (4) oxidative desamination of amino acids. Also, free ammonium occurs in the tissue of living fish as a result of normal desamination during cell metabolism. In this study, the author examined the possibility of the use of the level of ammonia in the tissue as an objective test of quality of fish and crustaceans. The experiments were carried out on four representatives of bony fishes (cod, plaice, redfish, herring), on two cartilaginous fish (spurdog, dogfish), and on two crustaceans (shrimp, lobster).

The shrimp were cooked on board ship and the lobsters were cooked a few hours after they were landed ashore. The fish were divided into two lots; the first lot was iced and stored at 0° C. and the second lot was held for 15 hr. at 15° C., then it was iced and stored at 0° C. Separate lots of shrimp and of lobsters were stored at 0° C. and 20° C. At periodic intervals determinations were made of ammonia, total volatile basic nitrogen, and trimethylamine.

The ammonia content of the tissue was of limited value as an objective test for quality of bony fish. The level of ammonia in the tissue of cartilaginous fish is a good objective test of the quality of such fish. The crustaceans became of borderline acceptability when the concentration of ammonia in the tissues reached 45 to 50 mg. N %. [7 figures, 15 references] FTP

7.51 COMBINED CHROMATOGRAPHIC AND ELECTROPHORETIC STUDIES OF SARCOPLASMIC PROTEINS AND THEIR ENZYMIC ACTIVITIES IN CYCLOSTOMES AND FISH

Filosofova, E. M., and T. F. Serebrenikova (Inst. Evol. Physiol. Biochem., Leningrad, U.S.S.R.)
Chemical Abstracts 74, No. 5, 20762f (Feb. 1, 1971)

7.597 (7.874) DETERMINATION OF FORMALDEHYDE IN CANNED FISH AND CRUSTACEA

Sundsvold, O. C., B. Updegraff, D. G. W. Ferguson, D. Feeley, and T. McGlathan (Offic. Norw. Quality Control Inst. Canned Fish Prod., Stavanger, Norway)
Chemical Abstracts 75, No. 15, 97246 (October 11, 1971)

7.51

that, in as much as the level of urea and allantoin excretion was highly susceptible to slight changes in dietary amino-acid balance, use of the A/U • Ip value provides a sensitive and reliable assessment of dietary protein quality.
[11 figure, 9 tables, 14 references] FTP

7.0 COLOR MEASUREMENT OF FOODS: XXXI. MISCELLANEOUS: PART I

Clydesdale, F. M., and F. J. Francis (Department of Food Science and Technology, University of Massachusetts, Amherst, MA 01002)
Food Product Development 6, No. 1, 66, 68, 70, 72, 77, 79 (February-March 1972)

The authors discuss color measurement of edible oils and fats, wide range spectrophotometry, and automatic detection of blood in eggs.
[5 figures, 45 references] FTP

7.89 SYMPOSIUM: TEXTURE MEASUREMENT

Authors as listed below
Food Technology 26, No. 1, 34 ff. (January 1972)

The first three articles of the Symposium appear in this issue of the journal; subsequent issues will contain additional articles.

"Texture--Its Definition, Measurement & Relation to Other Attributes of Food Quality," by Amihud Kramer (Dept. of Food Science, University of Maryland, College Park, MD 20742), pp. 34-36, 38-39.

The author discusses the problems involved in defining texture as a major component of sensory food quality and gives the present generally accepted definition--"that one of the three primary sensory properties of foods which relates entirely to the sense of touch or feel and is, therefore, at least potentially capable of precise measurement objectively by mechanical means in units of mass, or force." The author then discusses the measurement of texture and the relation of texture to other properties of food. [1 figure, 17 references]

"Sensory Assessment of Food Texture," by Judith A. Abbott (Horticultural Research Branch, Market Quality Research Division, ARS, U.S. Department of Agriculture, Beltsville, MD 20705), pp. 40, 42, 45-49.

Sensory panels are necessary for assessing the relative importance of texture to the acceptability of the food item and for determining the validity of instrumental (objective) measurements of texture related properties. The author refers to published reports on general sensory testing methodology and discusses preference/acceptance, discriminatory, and descriptive sensory test methods as they relate to evaluation of food texture. [3 figures, 3 tables, 25 references]

(over)

7.9 THE DETERMINATION OF NITRILOTRIACETIC ACID (NTA) IN SEWAGE AND SEWAGE EFFLUENT

Longman, G. F. (Unilever Research Laboratory, Port Sunlight, Cheshire, England), M. J. Stiff, and Deirdre K. Gardiner (Water Pollution Research Laboratory, Department of the Environment, Stevenage, England)
Water Research 5, No. 12, 1171-1175 (Dec. 1971)

Sodium nitrilotriacetate has been proposed as a replacement for phosphate in detergents. In this paper the authors describe their examination of the accuracy of the published methods for determining NTA and the modifications necessary to develop a satisfactory method to determine trace quantities.

The authors indicate that published methods for the determination of NTA are subject to interference in the analysis of sewage and sewage effluents. As a modification of the zinc-zincon method of determination, they propose passage of the sample through a chelating resin column as a pretreatment to eliminate metal interference. [1 table, 5 references]

FTP

Gheorghe, Vasile, Marioara Manea, Florin Jantea, and Doina Bad-Oprisescu (Inst. Ig. Sanatate Publ., Bucharest, Romania)
Chemical Abstracts 73, No. 23, 119274q (Dec. 7, 1970)

7.879 DETERMINING THE PRESERVING STATE OF FROZEN ATLANTIC COD AND
3.2499 HORSE MACKEREL. II. DYNAMICS OF THE PHYSICOCHEMICAL AND BACTERIOLOGICAL INDICATORS IN THE SPOILING PROCESS

7.89 SOME FLOW PROPERTIES OF FOODS IN NULL GRAVITY

Rambaut, Paul C. (Preventive Medicine Division, Medical Research and Operations Directorate, NASA/Manned Spacecraft Center, Houston, TX 77058), Charles T. Bourland (Life Sciences Division, Technology Incorporated, 17311 El Camino Real, Houston, TX 77058), Norman D. Heidelbaugh, Clayton S. Huber, and Malcolm C. Smith, Jr.
Food Technology 26, No. 1, 58-63 (January 1972)

This paper reports on a systematic testing program to evaluate the flow properties of 72 thermostabilized, frozen, or rehydratable foods and beverages proposed for use in the Skylab Orbital Workshop. The foods and beverages were tested under null gravity conditions produced by aircraft and under actual space flight conditions. The rheological behavior of foods differ in space. The authors conclude, however, that proper selection and adaptation of food formulations and packages will allow most foods to be easily handled in space flight. Because of the various constraints on foods for space flights, freeze-dried foods appear to be favored for use in future space food systems.
[14 figures, 1 table, 13 references]

FTP

Tajima, Kenichi, Yoshio Ezura, and Minoru Sakai (Laboratory of Microbiology, Faculty of Fisheries, Hokkaido University, Hakodate, Japan)
Bulletin of the Faculty of Fisheries Hokkaido University 22, No. 1, 73-79 (May 1971) (In Japanese) [4 figures, 1 table, 12 references]

7.86 PROCEDURE FOR THE ISOLATION OF PSYCHROPHILIC MARINE BACTERIA
(0.5)

7.9 FACTORS AFFECTING THE METABOLIZABLE ENERGY VALUES
(6.191) OF FEEDSTUFFS FOR POULTRY

Childs, G. Richard (Central Soya Co., Ft. Wayne, Ind.)
Feedstuffs 44, No. 7, 39, 49 (February 14, 1972)

This survey of the literature reveals substantial differences in reported values for metabolizable energy in any ingredient for feedstuffs for poultry. These differences may be attributed to variations in ingredient samples, age of animals, dietary nutrient levels, type of fat, and many other factors (such as, level of feed intake, level of ingredient substitution, method of processing the ingredient, environmental temperature, strain of bird, physical condition of the ingredient). Even so, the author concludes that metabolizable energy values are useful in the formulation and evaluation of poultry rations.
[17 references]

FTP

Patent, Gregory J., and Piero P. Foa (Dep. Res., Sinai Hosp., Detroit, Mich.)
Chemical Abstracts 74, No. 21, 108655j (May 24, 1971)

7.9 RADIOIMMUNOASSAY OF INSULIN IN FISHES. EXPERIMENTS IN VIVO AND
(9.13) IN VITRO

7.9 (6.191) A MAJOR PROBLEM IN METABOLIZABLE ENERGY DETERMINATIONS OF FEEDSTUFFS FOR POULTRY

Halloran, Hobart R. (Halloran Research Farm, Inc., Modesto, Calif.)
Feedstuffs 44, No. 7, 38-39 (February 14, 1972)

Variations in results for the analyses of chromium in metabolizable energy determinations can give erroneous values for metabolizable energy for feed ingredients. Chromium oxide is added to feed as an inert indicater material. The feed and the feces are analyzed for chromium and from these data the feces-to-feed ratio can be calculated without having to quantitatively measure feed intake and feces production. The present article reports on the results of a collaborative test among five different laboratories on the analysis of chromium in feeds and feces. Also, the author shows the variations in results for metabolizable energy as they are affected by the variations in results for the analyses of chromium. The paper demonstrated that variations in results for the assay for chromium in feeds can be one of the major problems in metabolizable energy determinations of feedstuffs. Furthermore, an inquiry of 17 investigators in the field of poultry research revealed that five of them used the total collection method to determine the feces-to-feed ratio because of the problem involved in the assay for chromium.
[3 tables, 36 references] FTP

8.50 (0.35) [NONPROTEIN NITROGEN COMPOUNDS IN THE MUSCLE TISSUE OF THE LARGE CHELAE AND THE ABDOMEN OF ASTACUS LEPTODACTYLUS ESCH] RESTSTICKSTOFF-SUBSTANZEN IN DER SCHEREN-UND SCHWANZMUSKULATUR VON ASTACUS LEPTODACTYLUS ESCH

Partmann, Walter (Bundesforschungsanstalt für Lebensmittel-frischhaltung, Karlsruhe, Germany)
Archiv für Fischereiwissenschaft 22, No. 2, 103-109 (October 1971) (In German)

The free ninhydrin-reactive substances from the abdomen and the large chelae for three groups of the fresh-water crayfish were determined separately by column chromatography. The total of the estimated components was higher for the muscle tissue from the large chelae than for the muscle tissue from the abdomen.

Ninhydrin reactive substances found in high amounts were (in decreasing level of concentration): arginine, glycine, glutamine, ß-alanine, α-alanine, taurine, anserine, methionine, glutamic acid. The levels of lysine, anserine, and arginine were lower in the muscles of the large chelae than in the muscles of the abdomen; the opposite was true for glutamine, histidine, and tyrosine.
[2 figures, 2 tables, 13 references] FTP

8.42 (9.19) ARSENIC CONTENT IN SEAFOODS IN BUENOS AIRES, ARGENTINA

Gutelli, M. A., N. A. Gallego Gandara De Fernicola, and M. Neira Rodriguez (Fac. Farm. Bioquím., Univ. Buenos Aires, Buenos Aires, Argentina)
Chemical Abstracts 75, No. 11, 75042x (September 13, 1971)

8.42 AUTOMATED METHOD FOR DETERMINATION OF MERCURY

Bailey, B. W., and F. C. Lo (Div. Lab. Res., New York State Dep. Health, Albany, N.Y.)
Chemical Abstracts 75, No. 24, 147489y (December 13, 1971)

7.89

"Instrumental Methods of Texture Measurement," by Alina S. Szczesniak (Technical Center, General Foods Corp., White Plains, NY 10625), pp. 50, 52-54, 56, 63.

The author discusses the applications, advantages, and limitations of various devices such as penetrometers, compressimeters, extruders, and masticometers. None of these devices measures "texture" as such; each measures only a portion of the physical properties bearing on this quality attribute (texture) of foods.
[3 figures, 3 tables, 25 references] FTP

7.9 (9.19) IDENTIFICATION OF THE GAS CHROMATOGRAPHIC DIELDRIN AND ENDRIN PEAKS BY CHEMICAL CONVERSION

Woodham, D. W., and C. D. Loftis, and C. W. Collier (Agricultural Research Service, Plant Protection Division, U.S. Department of Agriculture, Gulfport, MS 39501)
Journal of Agricultural and Food Chemistry 20, No. 1, 163-165 (January-February 1972)

In the Pesticides Monitoring Program (Initiated by USDA in 1964), analyses are made regularly on soil, water, sediment, and crop samples for a variety of pesticides. These tests include analyses for dieldrin (1,2,3,4,10,10-hexachloro-exo-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo,-exo-5,8-dimethanonaphthalene) and endrin (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo,-endo-5,8-dimethanonaphthalene). Even though there is no evidence of a buildup of these two pesticides in the environment, we require a reliable identification method to confirm any suspected dieldrin or endrin gas chromatographic peak because of their widespread use, their persistence in soils, and the rapid conversion of aldrin to dieldrin. Furthermore, identification methods for these and for other pesticides are becoming increasingly important with the finding of polychlorinated biphenyls in environmental samples.

In the present article, the authors describe a simple and rapid method for the simultaneous confirmation of dieldrin and endrin residues in soil, sediment, water, corn grain, corn stalks, and soybeans. The one-step sample treatment technique involves the use of 10% boron trichloride in 2-chloroethanol for the conversion of dieldrin and endrin into their corresponding derivatives. The dieldrin conversion requires 2-hr. reaction time and the endrin conversion requires 10-min. reaction time; parent residues can be confirmed at the 0.01-p.p.m. level.
[5 figures, 10 references] FTP

7.89 ELEMENTARY CONCEPTS OF RHEOLOGY RELEVANT TO FOOD TEXTURE STUDIES

Finney, Essex E., Jr. (Instrumentation Research Laboratory, Market Quality Research Division, ARS, U.S. Department of Agriculture, Beltsville, MD 20705)
Food Technology 26, No. 2, 68-77 (Feb. 1972)

Rheology is the branch of physics that deals with the deformation and flow of materials (solids and fluids). The rheological behavior of foods is associated with their textural characteristics. This paper discusses the elementary concepts of rheology relative to the textural properties of foods.
[11 figures, 1 table, 86 references] FTP

8.53 MACKEREL LIPIDS AND FATTY ACIDS

Ackman, R. G., and C. A. Eaton (Halifax Laboratory, Fisheries Research Board of Canada, Halifax, Nova Scotia, Canada)
Canadian Institute of Food Technology Journal 4, No. 4, 169-174 (1971)

The proportions of major lipids and of their fatty acids in the light muscle and the dark muscle of mackerel (Scomber scombrus) were determined. The two muscles differed sharply in lipid content; the dark muscle had about 12% lipid in the spring males and 9% in the spring females, and the light muscle had 2% to 3% in both sexes. Fall mackerel showed about twice as much lipid in the dark muscle and three times as much lipid in the light muscle as did the spring mackerel. Data on the fatty acid compositions of the total lipids of different muscle samples from three lots of fish and of triglycerides and phospholipids from muscles of another lot of fish are compared.
[1 figure, 7 tables, 24 references] FTP

9.11 OCEANOGRAPHIC SURVEY DEVICE

Starkey, Bertrand Julian, and Alexander Smith Watson (Dartmouth, Nova Scotia, Canada); assignors to EMI Limited, Hayes, Middlesex, England (pat.)
U.S. Patent 3,628,205
Official Gazette of the U.S. Patent Office 893, No. 3, 822 (Dec. 21, 1971)

This device includes a buoy that can record one or more parameters and that can move vertically (automatically controlled by clock means) to predetermined depths. FTP

9.11 MARINE TECHNICIANS HANDBOOK THERMOMETRY

Bryan, Walter (compiler)
Sea Grant Publication No. 17, Institute of Marine Resources, The Scripps Institution of Oceanography, P.O. Box 109, La Jolla, CA 92037 (1972), iv + 29 pp. Price $1.25.

This publication on Thermometry is one of a series that will provide explicit instructions for the collection of oceanographic data and samples at sea. Individual chapters are being issued separately and the cost of each is $1.25. Other chapters currently available are as follows:

Oxygen Analysis	Sea Grant Pub. No. 9
Gravity Coring	Sea Grant Pub. No. 10
Phosphate Analysis	Sea Grant Pub. No. 11
Sonar Pinger	Sea Grant Pub. No. 13
Instructions for Taking Air Samples on Board Ship: Carbon Dioxide Project	Sea Grant Pub. No. 14
Thermometry	Sea Grant Pub. No. 17

[7 figures, 6 sample forms, 1 reference] FTP

9.13 NUTRIENT EXCRETION BY ANCHOVIES AND ZOOPLANKTON IN PACIFIC UPWELLING REGIONS

Whitledge, Terry E., and Theodore T. Packard (Dep. Oceanogr., Univ. Washington, Seattle, Wash.)
Chemical Abstracts 75, No. 23, 137389b (December 6, 1971)

9.11 [INVESTIGATIONS ON THE EFFECTS OF WASHING ENZYMES ON FISHES AND OTHER WATER ORGANISMS]
UNTERSUCHUNGEN ÜBER DIE WIRKUNG VON WASCHMITTELENZYMEN AUF FISCHE UND ANDERE WASSERORGANISMEN

Mann, H. (Institut für Küsten- und Binnenfischerei der Bundesforschungsanstalt für Fischerei, Hamburg, Germany)
Archiv für Fischereiwissenschaft 22, No. 2, 146-154 (October 1971) (In German)

Proteolytic enzymes are used as components of washing compounds. In this study the authors determined the effect of the proteolytic enzyme Maxatase P on fish and on other water organisms of fresh and brackish water.
The most sensitive of the organisms to the enzyme were fish eggs and larvae. The LD_{50} (24 hr.) for eggs of aquarium fish (Rivulus cylindraceus) and trout fry was about 1 or 5 mg./l. of Maxatase P. The authors concluded from these tests that under normal conditions proteolytic enzymes of detergents (washing compounds) will have no detrimental effect on fish and other water organisms.
[2 figures, 1 table, 9 references] FTP

9.13 HEMATOLOGICAL EFFECTS OF DENNISON TAGGING UPON JUVENILE (1.34)(9.17) PINK SALMON (ONCORHYNCHUS GORBUSCHA)

Cardwell, Rick D., James B. Saddler, and Lynwood S. Smith (Coll. Fish., Univ. Washington, Seattle, Wash.)
Chemical Abstracts 75, No. 5, 32082t (August 2, 1971)

9.12 SENSORY FACTORS IN THE SIDE-TO-SIDE SPACING AND POSITIONAL ORIENTATION OF THE TUNA, EUTHYNNUS AFFINIS, DURING SCHOOLING

Cahn, Phyllis H. (Department of Marine Science, Long Island University, Greenvale, Long Island, NY 11548)
Fishery Bulletin 70, No. 1, 197-204 (January 1972)

This study was designed to demonstrate the role of the lateral line sensory system in fish schooling. Groups of 2, 3, 4, and 6 adult Euthynnus affinis were filmed during schooling orientation in the presence or absence of transparent partitions between them. When the hydrodynamic field between orienting fish was blocked by the partition, they significantly increased their side-to-side spacing, and changed their diagonal to abeam position ratios so that abeam orientation assumed increased importance. Apparently, hydrodynamic contact is essential for the typical spacing and positional orientation in schooling, and the lateral line, as the water turbulence detector, plays a prime regulatory role.
[4 figures, 3 tables, 24 references] Author's abstract

9.14 NUTRITIONAL REQUIREMENTS OF PRAWN. II. REQUIREMENTS (1.85) FOR STEROLS

Kanazawa, Akio, Noriho Tanaka, Shinichi Teshima, and Kenichi Kashiwada (Fac. Fish., Kagoshima Univ., Kagoshima, Japan)
Chemical Abstracts 75, No. 1, 2123q (July 5, 1971)

9.1 (1.85)(2.12) [FURTHER RESULTS OF LONGTERM OBSERVATIONS ON THE OCCURRENCE OF BY-CATCH FISH AND CRUSTACEANS IN THE CATCHES OF THE GERMAN SHRIMPS FISHERY (1961-1967)]
WEITERE ERGEBNISSE VON LANGZEITBEOBACHTUNGEN ÜBER DAS AUFTRETEN VON BEIFANGFISCHEN UND -KREBSEN IN DEN FÄNGEN DER DEUTSCHEN GARNELENFISCHEREI (1961-1967)

Tiews, K. (Institut für Küsten- und Binnenfischerei der Bundesforschungsanstalt fur Fischerei, Hamburg, Germany)
Archiv für Fischereiwissenschaft 22, No. 3, 214-255 (December 1971) (In German; summary in English)

This paper contains additional data covering the period 1961-1967 on the composition of the catches of the German shrimp fishery--the original study started in 1954.
[43 figures, 13 tables, 13 references] [Author's abstract modified by FTP]

9.12 SOME EFFECTS OF SALINITY AND TEMPERATURE ON EARLY DEVELOPMENT OF PACIFIC HERRING (CLUPEA PALLASI)

Alderdice, D. F., and F. P. J. Velsen (Biological Station, Fisheries Research Board of Canada, Nanaimo, British Columbia, Canada)
Journal of the Fisheries Research Board of Canada 28, No. 10, 1545-1562 (October 1971)

On the basis of comparison of laboratory and field observations, the authors suggest that occurrence and abundance of herring are related to the availability and extent of spawning salinities between 8 and 28‰. Population abundance of herring in northern waters appears to be associated with spawning temperature of 5°-9° C.; abundance is limited by temperatures of 9°-10° C.; and maximum temperature for spawning is about 10° C. Furthermore, the authors indicate that survival of viable larvae to yolk sac absorption would place the lower limit of thermal tolerance of Pacific herring eggs at between 4° and 5° C.
[8 figures, 6 tables, 54 references] FTP

9.1 (9.19) ECOSYSTEM ALTERATION BY MOSQUITOFISH (GAMBUSIA AFFINIS) PREDATION

Hurlbert, Stuart H., Joy Zedler, and Deborah Fairbanks (Department of Biology, San Diego State College, San Diego, CA 92115)
Science 175, No. 4022, 639-641 (February 11, 1972)

Controlled experiments were conducted on the role of the mosquitofish in artificial aquatic systems. The purpose was to show how extensive the effects of a fish population can be and how fish populations can influence eutrophication.

The authors found that in artificial pools the mosquitofish greatly reduced rotifer, crustacean, and insect populations and thus permitted extraordinary development of phytoplankton populations. Other effects produced were decreased optical transmissivity and increased temperature of the water, decreased levels of dissolved inorganic phosphorus and increased levels of dissolved organic phosphorus, inhibition of Spirogyra, and replacement of one annelid, Chaetogaster, by another, Aeolosoma.

The authors suggest that excessive phytoplankton (a principal symptom of eutrophication) may in some cases be more directly a result of man-caused alterations in fish populations than of man-caused increases in nutrient influx. Further, manipulation of fish populations, especially the enhancement of piscivore populations, is a potential method for reducing phytoplankton levels. However, such "biological control" of phytoplankton might cause increased standing crops of equally undesirable macroscopic vegetation (algae and higher plants). It is not known whether such side effects can be circumvented by the manipulation of other populations or variables. Nevertheless, the authors believe that fish deserve a higher place in the conceptual schemes of eutrophication research than they are now accorded. [1 table, 38 references] FTP

9.12 THE ELECTRIC SENSE OF SHARKS AND RAYS

Kalmijn, A. J. (Scripps Institution of Oceanography, La Jolla, CA 90237)
Journal of Experimental Biology 55, No. 2, 371-383 (October 1971)

Earlier work by various researchers have shown that (a) the shark and the ray are sensitive to weak electric fields, (b) the electric sensitivity of these fish is due to the ampullae of Lorenzini, (c) these fish can be stimulated by the bioelectric fields emanating from the flatfish Pleuronectes platessa. In the present study, the author carried out a series of experiments to determine whether the shark Scyliorhinus canicula and the ray Raja clavata utilize the bioelectric fields of the flatfish to detect the position of their prey. The experiments described in this paper demonstrated that this shark and this ray did make biologically significant use of their electric sensitivity to detect the position of their prey (a live flatfish). The author states, therefore, that we are justified in accrediting the animals with an electric sense and in designating the ampullae of Lorenzi as electroreceptors.
[2 figures, 17 references] FTP

9.13 (9.19) RECORDING ELECTRICAL ACTIVITY FROM THE LATERAL-LINE NERVE IN TROUT

Bahr, Thomas G. (Institute of Water Research, Michigan State University, East Lansing, MI 48823)
Progressive Fish-Culturist 34, No. 1, 59-61 (January 1972)

In testing the effects of water-borne pollutants on the nervous system of rainbow trout, the authors had to develop a technique to record electrical activity from the trunk lateral-line nerve for extended periods of time (up to 48 hr.). This paper describes the technique that they developed.
[2 figures, 2 references] FTP

9.12 OLFACTION IN PARENT STREAM SELECTION BY THE ALEWIFE (ALOSA PSEUDOHARENGUS)

Thunberg, Bruce Einar (School of Oceanography, University of Rhode Island, Kingston, RI 02881)
Animal Behaviour 19, No. 2, 217-225 (May 1971)

The purpose of this study was to determine the role of olfaction in the spawning migration of the alewives. The evidence presented in this report for "home stream" selection on the basis of odor suggests that alewives may use this mechanism to return to their parent stream.
[2 figures, 7 tables, 11 references] FTP

9.14 (9.13)(1.33) INTERACTIONS IN THE METABOLISM OF POLYUNSATURATED FATTY ACIDS IN THE COHO SALMON ONCORHYNCHUS KISUTCH

Tinsley, Ian J., James B. Saddler, Hugo M. Krueger, and Robert R. Lowry (Dep. Agric. Chem. Fish. Wildl., Oregon State Univ., Corvallis, Oreg.)
Chemical Abstracts 75, No. 11, 73357e (September 13, 1971)

9.13 CAROTENOIDS AND VITAMIN A IN SALMO IRIDEUS EGGS AND THEIR SIGNIFICANCE IN THE INITIAL PERIODS OF THE EMBRYOGENESIS

Georgiev, George S. (Higher Institute of Veterinary Medicine, Sofia, Bulgaria)
Folia Balcanica 2, No. 9, 1-11 (1971) (Fisheries Institute of S.R. of Macedonia, Pošt. fah 190, Skopje, Yugoslavia)

Earlier, researchers have shown that the high mortality rate during the incubation of eggs of rainbow trout is due to the absence of some essential substances which the mother fish failed to provide the eggs. S. Hirao and J. Yamada [Bull. Japan. Soc. Sci. Fish. 21, 240-243 (1955)] found that rainbow trout eggs lacking in iron and vitamin B_{12} show lowered percentage of hatching. In the present study, the author determined the levels of carotenoids and vitamin A in trout eggs and tried to correlate these values with the maturity of the eggs and the discharge of the eggs by the female. They found that (1) the carotenoid and vitamin A content of the eggs is greater in the eggs last to mature, (2) the main pigment in the eggs of naturally developing trout was astaxanthin and in the eggs of artificially bred trout was lutein, (3) the vitamin A content in the eggs of artificially bred trout is higher than that of naturally bred trout, and (4) the eggs with low carotenoid content showed a high mortality rate during the period of greatest sensitivity between the 12th and 15th day of incubation.
[1 figure, 2 tables, 16 references] FTP

9.14 THE EFFECTS OF DIETARY LIPIDS ON GROWTH, FOOD CONVERSION, LIPID AND FATTY ACID COMPOSITION OF CHANNEL CATFISH

Stickney, Robert R., and James W. Andrews (Skidaway Institute of Oceanography, 55 West Bluff Road, Savannah, GA 31406)
Journal of Nutrition 102, No. 2, 249-257 (February 1972)

Channel catfish (Ictalurus punctatus) fingerlings were reared in 1-m-diameter fiberglass tanks at 26° and fed 27 experimental diets differing in source of lipid. Duplicate groups of fish were fed each of eight primary lipid sources and each lipid was fed at a level of 10% of diets in three molecular forms: triglyceride, free fatty acid, and ethyl ester. Highest average weights occurred when the fish were supplemented with beef tallow, olive oil and menhaden oil triglycerides. Substantially lower gains were obtained from groups fed short- and medium-chain fatty acids, a fat-free diet, safflower oil (high in 18:2ω6) and linseed oil (high in 18:3ω3). In general, triglyceride and ethyl ester diets led to more rapid growth of channel catfish than did free fatty acid diets. Food conversions for fish fed triglyceride diets were superior to those of fish on the other two dietary lipid types. The deposition of fatty acids in whole carcasses followed very closely the fatty acid composition of the diet whereas deviation from the dietary fatty acid composition was noted in liver.
[5 tables, 16 references] Authors' abstract

9.13 MECHANISMS FOR SYNTHESIS OF ORGANIC MERCURY FOUND IN FISH

Anonymous
Nutrition Reviews 30, No. 1, 16-18 (January 1972)

Non-enzymatic methylation of mercury has been shown to occur readily in the presence of methyl cobalamine and mercuric chloride. In Neurospora crassa, an organism not requiring vitamin B_{12} or its derivatives, mercury methylation appears to be a detoxification reaction involving one or more steps of the methionine biosynthesis pathway.

The toxic methyl mercury is readily synthesized by microorganisms and under conditions that exist in the sludge at the bottom of lakes, canals, and bodies of water where fish may ingest and concentrate it in their tissues. It is still not clear from the evidence whether methyl mercury can be synthesized by fish, but it seems most likely from these studies that synthesis by microorganisms is the major source. Reprinted in part

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9.19 OIL SPILL DISPERSANTS
(9.15)

Beynon, L. R. (BP Res. Cent., Br. Pet. Co. Ltd., Sunbury-on-Thames, Middlesex, England)
Chemical Abstracts 75, No. 7, 45985q (August 16, 1971)

9.14 ESSENTIAL FATTY ACIDS IN THE DIET OF RAINBOW TROUT
(9.13) (SALMO GAIRDNERI): PHYSIOLOGICAL SYMPTOMS OF EFA DEFICIENCY

Castell, J. D., R. O. Sinnhuber, D. J. Lee, and J. H. Wales (Department of Food Science and Technology, Oregon State University, Corvallis, OR 97331)
Journal of Nutrition 102, No. 1, 87-92 (January 1972)

Certain physiological changes in rainbow trout (Salmo gairdneri) which may be attributed to a dietary insufficiency of the essential fatty acids of the linolenic or ω3 series are described. A greatly increased mitochondrial swelling rate was induced in fish fed a fat-free diet. Linolenic acid was most effective in reducing the swelling phenomenon. Diets without ω3 fatty acids showed an increased liver respiration rate, a slightly lower hemoglobin content and increased muscle water. Authors' abstract

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9.16 REARING PACIFIC HERRING IN THE LABORATORY

Talbot, G. B., and Sven I. Johnson (Tiburon Marine Laboratory, U.S. Bureau of Sports Fisheries and Wildlife, Tiburon, CA 94920)
Progressive Fish-Culturist 34, No. 1, 2-7 (January 1972)

The successful culture of marine fishes in the laboratory will provide test animals for studies in many scientific fields and will eventually serve to prove the feasibility of culturing these fish as a source of food. This article reports on work carried out at the Tiburon Marine Laboratory on the rearing of Pacific herring in the laboratory.
[2 figures, 12 references] (Abstract modified by FTP)

9.13 DIFFERENTIAL MOVEMENT OF DIGESTIBLE AND INDIGESTIBLE FOOD FRACTIONS IN RAINBOW TROUT, SALMO GAIRDNERI

Kionka, B. C., and J. T. Windell (Fish Physiology Laboratory, University of Colorado, Boulder, CO 80302)
Transactions of the American Fisheries Society 101, No. 1, 112-115 (January 1972)

Earlier work has shown that the rate of gastric evacuation of food in rainbow trout is affected by the quantity and quality of the food consumed. Some evidence exists, too, that artificially prepared dry foods require a longer period in the stomach of the fish than do natural foods even though the dried foods are of a finely ground consistency. Why this delay occurs with dry foods is not understood, but it might be related to water content, fat content, or roughage content, and to other factors. In this present study, the authors present evidence that chitin slows the rate of gastric evacuation in rainbow trout.
[2 figures, 1 table, 8 references] FTP

9.14 (9.13) ESSENTIAL FATTY ACIDS IN THE DIET OF RAINBOW TROUT (SALMO GAIRDNERI): LIPID METABOLISM AND FATTY ACID COMPOSITION

Castell, J. D., D. J. Lee, and R. O. Sinnhuber (Department of Food Science and Technology, Oregon State University, Corvallis, OR 97331)
Journal of Nutrition 102, No. 1, 93-100 (January 1972)

The fatty acid composition of the liver, heart, kidney, brain and body lipids of fish fed either a fat-free diet or those containing known amounts of oleic, linoleic, or linolenic was determined. A fat-free diet or one containing oleic acid as a sole lipid source resulted in elevated levels of eicosatrienoic acid (20:3ω9). Dietary linoleate and linolenate both depressed the triene levels. The former acid elevated 20:4ω6 and 22:5ω6 concentrations and the latter increased 22:6ω3 tissue levels. Dietary lipids affected the fatty acid composition of phospholipids to a greater degree than those in the neutral lipids. The demonstrated requirement for the ω3 fatty acids by fish suggest that the 20:3ω9/22:6ω3 ratio in the phospholipid fraction be used as an index of essential fatty acid nutrition. Fish receiving 0.7% or more of linolenate in the diet had 20:3ω9/22:6ω3 ratios of less than 0.4. Diets which produce this ratio value or less appear to be adequate in the ω3 fatty acids (linolenate series) and fulfill the nutritional requirements of young fish as judged by growth and other physiological parameters.
Authors' abstract

9.19 EFFECT OF INSECTICIDES AGAINST BLACK FLY LARVAE AND FISHES

Matsuo, Kikuo, and Tasuo Tamura (Kyoto Prefect. Univ. Med., Kyoto, Japan)
Chemical Abstracts 75, No. 1, 4585r (July 5, 1971)

9.16 PROCEEDINGS OF THE FIRST ANNUAL WORKSHOP (9.6) WORLD MARICULTURE SOCIETY

Avault, James W., Jr. (editor) Published by Louisiana State University, Baton Rouge, LA 70803 (1971), 177 pp. Price $3.00
Saul B. Saila (Marine Experiment Station, University of Rhode Island, Kingston, RI 02852) (reviewer)
Transactions of the American Fisheries Society 101, No. 1, 140 (January 1972)

9.14 (4.64) ROLES OF TOCOPHEROLS IN FISH. II. EFFECTS OF TOCOPHEROL-HOMOLOGS ON THE TOXICITY OF OXIDIZED OIL TO CARP

Higashi, Hideo, Shohei Nakamizo, Naomi Ozaki, Kazuko Terada, Kiyotake Kagaya, and Tomoko Nakahira (Komazawa Girl's Junior Coll., Tokyo, Japan)
Chemical Abstracts 74, No. 9, 39831z (March 1, 1971)

9.14 (9.13) ESSENTIAL FATTY ACIDS IN THE DIET OF RAINBOW TROUT (SALMO GAIRDNERI): GROWTH, FEED CONVERSION AND SOME GROSS DEFICIENCY SYMPTOMS

Castell, J. D., R. O. Sinnhuber, J. H. Wales, and D. J. Lee (Department of Food Science and Technology, Oregon State University, Corvallis, OR 97331)
Journal of Nutrition 102, No. 1, 77-86 (January 1972)

Experiments are described to define further the fatty acid requirements of rainbow trout (Salmo gairdneri). In all cases, feeding semipurified diets containing no polyunsaturated fatty acids resulted in poor growth and feed conversion. Linolenic acid was superior to linoleic in stimulating growth and improving feed conversion. The requirement of linolenic acid (ω3 fatty acids) for rainbow trout is 1% of the diet or approximately 2.7% of the dietary calories. Essential fatty acid deficiency symptoms that were cured or prevented by linolenic acid included fin erosion, heart myopathy, and a shock syndrome. It is concluded that linolenic acid has an essential role in rainbow trout similar to that assigned to linoleic acid in man and higher animals. Authors' abstract

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9.15 RESEARCH INTO FISH DISEASES

Mawdesley-Thomas, Lionel E. (Huntingdon Research Centre, Huntingdon PE18 6ES, England)
Nature 235, No. 5332, 17-19 (January 7, 1972)

This article is a brief review of some of the research work into diseases of fish. The subject matter was considered under four groups: Parasitic diseases, bacterial diseases, viral diseases, and neoplastic diseases. The author indicates that, although recent advances have been made in research into fish diseases, some problems, such as preventive medicine and the relationship between pollution and diseases, have yet to be investigated in detail.
[1 figure, 1 table, 52 references] FTP

9.15 (9.19) TOXICITY OF COPPER COMPLEXES TO FRESHWATER MOLLUSKS

Kapkov, V. I. (U.S.S.R.)
Chemical Abstracts 75, No. 9, 60520c (Aug. 30, 1971)

9.15 (9.16) DETOXIFICATION OF POND WATER TREATED WITH ENDRIN

Banerjee, S. C. (Cent. Inland Fish. Res. Substn., Cuttack, India)
Chemical Abstracts 75, No. 7, 47832m (August 16, 1971)

9.16 (0.8) A CIRCULATING SEAWATER SYSTEM FOR EXPERIMENTAL STUDIES WITH CRABS

Cook, David W. (Microbiology Section, Gulf Coast Research Laboratory, Ocean Springs, MS 39564)
Progressive Fish-Culturist 34, No. 1, 61-62 (January 1972)

For a blue crab disease study, it was necessary to hold large numbers of crabs in a healthy environment for several months. Two main problems, cannibalism and fouling of the water, were encountered when conventional aquarium techniques were used. To overcome these problems, a circulating seawater system, as described here, was devised and has been used successfully in the laboratory for the past year. Because of the low initial cost, the simplicity of construction, and the minimum amount of maintenance required, workers may be interested in using this system in their experimental studies.
[2 figures] Author's introduction

9.17 HOW TO BUILD AND SAVE BEACHES AND DUNES.

Jagschitz, John A., and Robert C. Wakefield (College of Resource Development, University of Rhode Island, Kingston, RI 02881) Agricultural Experiment Station, Bulletin 408, 12 pp. (October 1971) Available from the Agricultural Experiment Station, Woodward Hall, University of Rhode Island, Kingston, RI 02881)

In this brief bulletin, the authors discuss the building of beaches and dunes, and the planting, and fertilizing of beachgrass for the saving of beaches and dunes. [1 figure, 5 illustrations, 18 references] FTP

9.17 (2.1475) ESCAPE BEHAVIOR OF THE HAWAIIAN SPINNER PORPOISE (STENELLA CF. S. LONGIROSTRIS)

Perrin, William F., and John R. Hunter (Southwest Fisheries Center, National Marine Fisheries Service, NOAA, U.S. Department of Commerce, La Jolla, CA 92037)
Fishery Bulletin 70, No. 1, 49-60 (January 1972)

Incidental mortality of porpoise (Cetacea, Delphinidae) occurs in the tropical tuna seine fishery. Experiments were carried out in a crowding chamber to determine behavioral responses of trained and naive Hawaiian spinner porpoise (Stenella cf. S. longirostris) to barriers of purse-seine netting, monofilament webbing, polyvinyl sheeting, rows of floats, and openings of various dimensions in a net wall. The object of the experiments was to generate information to be used in development of rescue gear and methods for the fishery. Openings of less than 1.5 m in width and/or 1 m in depth markedly inhibited escape. Negative effect of a line of floats across an opening at the surface was pronounced. Barriers of visually and acoustically relatively transparent monofilament webbing and polyvinyl sheeting were not apparently detected by porpoise prior to physical contact. Recommendations pertaining to potential design of rescue gear are presented.
[8 figures, 3 tables, 15 references] Authors' abstract

9.19 (9.17) RESULTS OF STUDYING PESTICIDES IN CONNECTION WITH THE SANITARY PRESERVATION OF RESERVOIRS

Cherkinskii, S. N., and K. I. Akulov (Mosk. Med. Inst. im. Sechenova, Moscow, U.S.S.R.) Chemical Abstracts 74, No. 25, 139891n (June 21, 1971)

9.19 DDT IN THE BIOSPHERE: WHERE DOES IT GO?

Woodwell, George M., Paul P. Craig, and Horton A. Johnson (Brookhaven National Laboratory, Upton, NY 11973)
Science 174, No. 4014, 1101-1107 (December 10, 1971)

Basic questions regarding the distribution and effects of DDT still remain. These are (1) What becomes of DDT released into the biosphere? (2) How serious are the hazards? (3) How long will the hazards persist? In an attempt to answer these questions, the authors developed a model of the circulation of DDT in the biosphere.

Apparently, the worldwide pattern of movement of DDT residues is from the land through the atmosphere into the oceans and into the oceanic abyss. Concentrations in the atmosphere and in the mixed layer of the oceans probably lag by only a few years behind the amounts of DDT used annually throughout the world. The model suggests that maximum concentrations of DDT occurred in the air in 1966 and in the mixed layers of the oceans in 1971. The authors indicate that the biota probably contains in total less than 1/30 of 1 year's production during the mid-1960's. Most of the DDT produced has been degraded to innocuousness or has been sequestered in places where it is not freely available to the biota; recent work seems to support the latter assumption. Despite the abundance, presistence, and worldwide distribution of DDT residues, they are not as freely available to the biota as might be assumed. How and where they are held are not yet clear; however, the biosphere seems to have a large capacity for holding them apart from the biota. The authors' analysis suggests that mere good fortune has protected man and the rest of the biota from much higher concentrations.
[2 figures, 2 tables, about 75 references] FTP

9.19 ULTRASTRUCTURAL EVIDENCE FOR NEPHROPATHY INDUCED BY LONG-TERM EXPOSURE TO SMALL AMOUNTS OF METHYL MERCURY

Fowler, Bruce A. (Department of Pathology, University of Oregon Medical School, Portland, OR 97201)
Science 175, No. 4023, 780-781 (February 18, 1972)

Organo-mercury compounds are metabolized in the kidney and liver of mammals to inorganic mercury; the kidney is the major site of concentration and storage of mercury derived from the organo-mercury chemicals. This article is a report of results of experiments on the effects of long-term exposure to low doses of methyl mercuric chloride (CH_3HgCl) on rat nephron (the functional unit of the kidney). A low dose of methyl mercuric chloride was fed to female Wistar rats for 12 weeks. The rats showed extrusion of numerous cytoplasmic masses from kidney proximal tubule cells of the pars recta segment. The author indicates that these masses were characterized ultrastructurally by the presence of a smooth endoplasmic reticulum aggregate. This effect may be produced by the in vivo metabolism of methyl mercury to inorganic mercury, and may account for the proteinuria observed in persons occupationally exposed to organic mercury compounds.
[3 figures, 23 references] FTP

9.19 (9.16)(1.81) HEAVY METALS AND OYSTER CULTURE IN WALES

Elderfield, H., L. Thornton, and J. S. Webb (Appl. Geochem. Res. Group, Imp. Coll., London, England)
Chemical Abstracts 75, No. 5, 32080r (Aug. 2, 1971)

9.17 TRAVELING SCREEN FOR REMOVAL OF DEBRIS FROM RIVERS

Bates, Daniel W., Ernest W. Murphey, and Martin G. Beam (National Marine Fisheries Service, NOAA, Biological Laboratory, 2725 Montlake Blvd. East, Seattle, WA 98102)
NOAA Technical Report NMFS SSRF-645, 6 pp. (October 1971) Available from the U.S. Government Printing Office, Washington, DC 20402. Price $0.25. Stock No. 0320-0016.

This report describes the features and operation of a traveling debris screen, installed within a 12.2-m wide test flume in the Grande Ronde River near Troy, Oreg. The National Marine Fisheries Service developed the screen to improve removal of debris from canals and rivers of the Pacific Northwest and to reduce costs of removal. Trash racks are now used to remove debris, but they have been considered impractical because of maintenance difficulties during floods and because of their large size.

The debris screen, as described, appears to be practical for canal and river flows of considerable magnitude, limited only by the seasonal passage of moss. [6 figures, 1 table, 2 references] Authors' abstract and summary in part

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9.16 SECTIONAL TANKS FOR FISH FARMS
(0.8)

Milne, P. H. (University of Strathclyde)
World Fishing 21, No. 1, 20, 22 (Jan. 1972)

The author discusses briefly the construction and costs of fiber glass and plastic tanks for fish hatchery and nursery stock. FTP

9.16 INTERACTIONS OF FEEDING RATES AND ENVIRONMENTAL TEMPERATURE ON GROWTH, FOOD CONVERSION, AND BODY COMPOSITION OF CHANNEL CATFISH

Andrews, James W., and Robert R. Stickney (Skidaway Institute of Oceanography, Savannah, GA 31406)
Transactions of the American Fisheries Society 101, No. 1, 94-99 (January 1972)

In earlier work, various researchers reported that environmental temperature affects growth, food consumption, and food conversion of catfish reared in ponds. Information on the interaction of feeding rates and temperature and their effects on growth, food conversion, and body composition of catfish would be useful to fish culturists; from such information, they could determine the optimum frequency of feeding, the amount of feed to use, and the composition of the diet. Furthermore, such information is necessary in order to determine the economic feasibility of controlling temperatures in tank or raceway high-density culture systems. The purpose of this study, then, was to obtain information on the interactions of feeding rates and environmental temperatures in channel catfish.

Channel catfish fingerlings were held in 20-gal. glass aquaria at 18°, 22°, 26°, 30°, and 34°C.; duplicate groups at each temperature were fed 2%, 4%, and 6% of their biomass daily. After 12 weeks, sample fish from each group were weighed and were analyzed for content of total body lipids and for fatty acid composition.

The highest average percentage weight gains and the best food conversion ratios were achieved in catfish reared at 30° C. At all the temperatures tested, a feeding rate of 4% of biomass daily was adequate for rapid growth of the fish. A nearly linear increase in lipid content of from 23.8% to 43.6% of whole carcass occurred with the increase in environmental temperatures of from 18° to 34° C. The arachidonic acid and docosahexaenoic acid compositions of the total fatty acids in the fish increased with decreasing environmental temperatures. [4 figures, 3 tables, 17 references] FTP

9.19 POWER, POLLUTION, AND PUBLIC POLICY
(9.3)

Ducsik, Dennis W. (editor)
M.I.T. Report No. 24, Massachusetts Institute of Technology, National Sea Grant Program, Sea Grant Project GH-88, Cambridge, Mass. (1971), xiii + 322 pp. Price $12.50. Available from the M.I.T. Press, Cambridge, MA 02142.

This book discusses issues in electric power production, shoreline recreation, and air and water pollution facing New England and the Nation. It contains six chapters. The first describes the general economic and political framework governing allocative decisions relative to air, land, and water resources. The second examines the new concept of siting electric power stations at offshore locations. The third outlines a new political framework within which valuable coastal land can be managed. The fourth examines the sulfur oxide air-pollution situation and schemes for collective action to control sulfur-oxide emissions. The fifth examines the water-pollution problem in Boston Harbor. The sixth outlines a hypothetical regional government for the New England area designed to deal with the various types of problems discussed in the preceding chapters of this book. FTP

9.19 SUBLETHAL EFFECTS OF MERCURY ON MARINE ALGAE
(6.39)

Boney, A. D. (Dep. Bot., Univ. Glasgow, Scotland)
Chemical Abstracts 75, No. 11, 72928e (September 13, 1971)

9.19 GROWTH RESPONSE OF BLUE-GREEN ALGAE TO ALDRIN, DIELDRIN, ENDRIN AND THEIR METABOLITES

Batterton, J. C., C. M. Boush, and F. Matsumura (Department of Entomology, University of Wisconsin, Madison, WI 53706)
Bulletin of Environmental Contamination and Toxicology 6, No. 6, 589-594 (November-December 1971)

Aldrin, dieldrin, endrin, and five corresponding metabolites inhibit growth of algae. Conversion of these pesticides in nature to their metabolites does not necessarily represent degradation and detoxication steps as judged from the data obtained in this study. Therefore, the authors indicate that studies on the toxicological nature of these "terminal residues" on various ecosystems appear to be imperative to understand the magnitude of the effects of pesticides in environments. [2 tables, 17 references] FTP

9.19 STUDIES ON THE PERSISTENCE OF SOME CARBAMATE INSECTICIDES IN THE AQUATIC ENVIRONMENT -- I. HYDROLYSIS OF SEVIN, BAYGON, PYROLAN AND DIMETILAN IN WATERS

Aly, Osman M., and M. A. El-Dib (National Research Center, Water Pollution Department, Dokki, Cairo, U.A.R.)
Water Research 5, No. 12, 1191-1205 (December 1971)

The persistence of carbamate pesticides in natural waters is greatly influenced by the pH value and temperature of the aquatic environment. FTP
[5 figures, 4 tables, 9 references]

9.19 [TENSIDE IN THE COASTAL WATERS OF THE NORTH SEA]
ÜBER ANIONENAKTIVE TENSIDE IM KÜSTENGEBIET DER NORDSEE

Bock, K. J., and H. Mann (Institut für Küsten- und Binnenfischerei der Bundesforschungsanstalt für Fischerei, Hamburg, Germany)
Archiv für Fischereiwissenschaft 22, No. 3, 287-292 (December 1971) (In German; summary in English)

The anionic "tensides" in the mouths of the rivers Elbe, Eider, and Ems were detected in very low concentrations only in the immediate vicinity of the waste water outlets. The highest concentration found was 0.3 mg./l. The authors indicate that even in relatively high concentrations, n-alkyl benzene sulfonates are decomposed in brackish and sea water without difficulty by over 90% after a phase of adaptation.
[2 figures, 8 references] [Authors' abstract modified by FTP]

9.3 NATIONAL GOALS AND ENVIRONMENTAL LAWS

Carpenter, Richard A. (Environmental Policy Division, Congressional Research Service, Library of Congress, Washington, D.C.)
Technology Review 74, No. 3, 58-63 (January 1972)

The author argues that environmental protection is likely to be better achieved by flexible restraints than by rigid regulations. FTP

9.2 NEEDED: A BETTER WAY TO MEASURE PRODUCT CONCEPTS

Tauber, Edward M. (California State College, Fullerton, CA 92634)
Food Product Development 6, No. 1, 45-46, 48 (February-March 1972)

Concept testing is an initial probe to pretest the consumer appeal of new ideas in products or services. The author suggests a revised approach that may avoid some of the pitfalls in present procedures. FTP
[2 tables, 5 references]

9.19 FERTILIZERS AND AGRICULTURAL CHEMICALS
(0.6)

Anonymous
Sub-Council Rept. of the National Industrial Pollution Control Council, Washington, D.C., 42 pp. (October 1971) Paper copy available from the Government Printing Office, Washington, DC 20402; Order No. Y3.IN2/8:2F41; price $0.30.
Government Research Announcements 71, No. 22, 126 (Nov. 25, 1971)

The report lists the principal problem areas involved in the use of agricultural chemicals and suggests means of coping with these problems. It deals with the fertilizer industry and the pesticide industry in separate sections. The Sub-Council's principal recommendations for attaining desirable levels of environmental protection and production are included. (Author) Reprinted

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9.19 SOME EFFECTS OF LOGGING AND ASSOCIATED ROAD CONSTRUCTION
(9.17) ON NORTHERN CALIFORNIA STREAMS

Burns, James W. (California Department of Fish and Game, Sacramento, CA 95814)
Transactions of the American Fisheries Society 101, No. 1, 1-17 (January 1972)

During the period of from 1966 through 1969, the author studied the effects of logging and road construction on four trout and salmon streams in California. The work included measurements of sedimentation in the beds of the streams, of the quality of the water, of the abundance of food for fish, and of the capacity of the stream as a nursery for fish. Apparently, logging was compatible with the production of anadromous fish when adequate attention was given to protection of the streams and clearance of the channel. In narrow streams, excessive use of bulldozers on steep slopes and in stream channels caused excessive sedimentation. Sustained logging prolonged adverse conditions in one stream.
[9 figures, 9 tables, 38 references] FTP

9.19 PROTECTION OF MAN AND HIS ENVIRONMENT AGAINST THE SIDE EFFECTS
(9.3) OF PESTICIDE USE
(1.0144)

Kwiatkowski, Marian, and Joanna Zoledziowska (Inst. Przem. Org., Warsaw, Poland)
Chemical Abstracts 74, No. 25, 139885p (June 21, 1971)

9.2 LONG-RANGE FORECASTS OF ACTIVITIES IN THE MARINE ENVIRONMENT

Spangler, Miller B. (National Planning Association, Center for Techno-Economic Studies, Washington, D.C.)
Sponsored in part by U.S. Coast Guard, Washington, D.C.
Report in three parts (Sept. 8, 1971)
Government Research Announcements 71, No. 21, 23 (Nov. 10, 1971)

Part I. Chapters 1-4; 370 pp.
Contents:
Methodological aspects of forecasting activities in the marine environment and their implications for the Coast Guard;
New technology and search and rescue operations;
Regional characteristics and forecasts of socio-economic trends.
Ibid. Part II. Chapters 5-7; 315 pp.
Contents:
Forecasts of oceanographic and other R and D in the marine environment;
Forecasts of recreation in the marine environment;
Commercial fishing and aquaculture.
Ibid. Part III. Chapters 8-11; 356 pp.
Contents:
Forecasts of offshore oil and other marine mining;
Long-range forecasts of marine transportation activities in U.S. coastal waters;

(over)

9.19 TRACE MATERIALS IN WASTES DISPOSED TO COASTAL WATERS: FATES, MECHANISMS AND ECOLOGICAL GUIDANCE AND CONTROL

Feldman, Milton H. (Pacific Northwest Water Lab., Corvallis, Oreg.)
Working Paper 78 W71-11793, FWQA-16070-07/70, 107 pp. (July 1970) Available from the National Technical Information Service, Operations Division, Springfield, VA 22151. Order No. PB-202 346; PC$3.00; MF$0.95.
Government Research Announcements 71, No. 21, 48 (November 10, 1971)

Wastes currently being discharged to the coastal waters of the United States include trace organic contaminants (TC), trace elements (TE), and other trace materials (TM). Those TM dealt with included: (1) known violently noxious materials (Pb(+2), (CN)2(-2), Hg(+2)); (2) materials which are biostimulatory to some species (cobalamin, iron chelates, thiamin, biotin, Mn, Mg; and (3) materials which are bioinhibitory for at least some species in various mechanisms (DDT, Se, Mn, Mg). A different view of the problem was taken in which ways of selecting the optimum organism to utilize a particular waste were preferred to methods of removing it conventionally. A thorough literature search revealed a significant lack of literature in waste breakdown for both qualitative and quantitative evaluation. It was concluded that further studies should be performed for each known trace material to determine: The mechanism whereby it is secluded; The metabolic threshold; The active level; The harmful level; The speciation requirements; The absolute rates in and out of the compartments of which coastal waters, sediments, chemical system phases, and biota may be considered as composed. Evaluations such as these were performed for DDT, and they must be performed for the known set of waste constituents before rational action to prevent damage to the oceans is possible.
Reprinted

9.19 EMBRYOPATHIC EFFECTS OF MERCURIC SALTS

Gale, Thomas F., and Vergil H. Ferm (Department of Anatomy, Dartmouth Medical School, Hanover, NH 03755)
Life Sciences, Part II Biochemistry General and Molecular Biology 10, No. 23, 1321-1326 (December 8, 1971)

This paper reports the results of a systematic study of the effects of mercuric acetate and phenylmercuric acetate on embryogenesis in the golden hamster. The mercurials were administered to the anesthetized pregnant hamsters early on the eighth day of gestation. The fetuses removed from the female on either the twelfth or the fourteenth day of gestation showed a delayed growth rate and varying degrees of dorsally localized subcutaneous edema. Also, both mercurials produced the following manifestation of toxicity in the maternal system: weight loss, kidney lesions, diarrhea, slight tremor, and somnolence.
[1 table, 21 references] FTP

9.19 CARBON, NITROGEN, AND PHOSPHORUS AND THE EUTROPHICATION OF FRESHWATER LAKES

Schindler, D. W. (Fisheries Research Board of Canada, Freshwater Institute, Winnipeg 19, Manitoba, Canada)
Journal of Phycology 7, No. 4, 321-329 (December 1971)

The author reviews the question of nutrients responsible for eutrophication of fresh-water lakes and discusses recent additions to the literature on nutrient limitation. [1 figure, 2 tables, 83 references] FTP

9.2

Forecasts of air transportation activities in the marine environment;
Requirements for search and rescue in marine recreation;
Requirements for search and rescue in other activities in the marine environment.
Reprinted
[The outlined report is available from the National Technical Information Service, Operations Division, Springfield, VA 22151. Order No. Part I, AD-729 892; Part II, AD-729 893; Part III, AD-729 894; price for each Part PC$6.00; MF$0.95.

9.2 THE PUGET SOUND SULPHITE PULP MILLS AND THE TRAGEDY OF THE COMMONS (9.19)

Fonda, R. W. (Department of Biology, Western Washington State College, Bellingham, WA 98225 U.S.A.)
Biological Conservation 4, No. 1, 31-38 (Oct. 1971)

The author demonstrates, in this paper, that Garrett Hardin's thesis of "mutual coercion, mutually agreed upon by the majority of the people affected," is well founded, and that it represents a feasible approach to control of pollution. [3 figures, 4 tables, 4 references] FTP

9.3 A FISHING ZONE DELIMITATION OF THE ALASKAN COAST: INTRODUCING FISHERY BASELINES

Vosper, William J.
Sea Grant Technical Bulletin No. 18, University of Miami Sea Grant Program (Ocean Law), NOAA Sea Grant No. 2-35147, Coral Gables, Fla. (1971), ix + 127 pp. Price $3.00. Available from Information Services, Sea Grant Institutional Program, University of Miami, 10 Rickenbacker Causeway, Miami, FL 33149.

The material in the bulletin was submited the author as a thesis in partial fulfillment of the requirements for the degree of Master of Laws in Ocean Law. The report examines the concept of fishery baselines around the coast of Alaska. [256 footnotes; bibliography of 121 references to books, articles, leaflets, cases, statutes, and other documents] FTP

9.3 INSTITUTIONS FOR MANAGING LAKES AND BAYS (9.19)

Craine, Lyle E. (School of Natural Resources, University of Michigan, Ann Arbor, Mich.)
Natural Resources Journal 11, No. 3, 519-546 (July 1971)

This article deals with the factors involved in designing a lake/bay management agency including the scope of the agency's powers, its geographic distribution, the interactions between it and other agencies, and the organizational form of its governing body. [10 footnotes] FTP

2.06 SYNTHETIC CAVIAR

Nesmeyanov, A. N., S. V. Rogozhin, G. L. Slonimsky, V. B. Tolstoguzov, and V. A. Ershova (pat.)
U.S. Patent 3,589,910
Food Technology 25, No. 11, 114 (November 1971)

The synthetic caviar consists of a mixture of edible proteins and gelatin. FTP

2.06 FISHBURGERS

Aomoriken et al. (pat.)
Japanese Patent 21776/71
Food Technology 25, No. 12, 78 (1290) (December 1971)

Ground fish meat is prepared into breaded hamburgerlike patties. FTP

2.3 BREADING APPARATUS

Fischer, L. G., H. B. Kaufman, and J. P. McCarthy; DCA Food Industries (pat.)
U.S. Patent 3,595,680
Food Technology 25, No. 12, 76 (1288) (December 1971)

Foods are battered and breaded using a machine having a rotary drum. FTP

2.3 ROTARY FILTERING DEVICE AND PROCESS OF OPERATING SAME

Rokitansky, Karl, and Gunther Solt (Vienna, Austria); assignors to Vogelbusch Gesellschaft G.m.b.H., Vienna, Austria (pat.)
U.S. Patent 3,616,908
Official Gazette of the U.S. Patent Office 892, No. 1, 120 (Nov. 2, 1971)

The apparatus consists of a rotary drum filter having a filter aid layer on its filter surface. FTP

3.17 FISH PRESERVATION

Gunthier, B., and J. Mocotte; Progil (pat.)
U.S. Patent 3,600,198
Food Technology 25, No. 12, 77 (1289) (December 1971)

Fish are preserved by exposing them to ice or water containing propionic and benzoic acids buffered to a pH of less than 7. FTP

3.237 FROZEN FISH FILLETS

Produits Findus S.A. (pat.)
British Patent 1,240,497
Food Technology 25, No. 12, 78 (1290) (December 1971)

A layer of comminuted fish flesh is placed on the inside surface of a fillet and then a second fillet is placed on top. The unit resembles a whole fish. FTP

3.4 SMOKE-HOUSE

Koland, D. H., V. L. Schultz, and A. B. Shambeau; R. S. Bardin (pat.)
Canadian Patent 874,932
Food Technology 25, No. 11, 118 (November 1971)

The apparatus uses racks mounted on a rotor to support the foodstuff to be smoked. FTP

3.4 SMOKING PROCESS

Allen, W. M.; Development Consultants, Inc. (pat.)
Canadian Patent 874,925
Food Technology 25, No. 12, 77 (1289) (December 1971)

The foodstuff is exposed to a cloud of nebulized liquid smoke. FTP

2.113 MARINE ANTIFOULANT WITH COPPER, COBALT OR MANGANESE TEREPHTHALATE

Leipold, Hans A. (Chicago, Ill.); assignor to Standard Oil Co., Chicago, Ill.)(pat.)
U.S. Patent 3,623,896
Official Gazette of the U.S. Patent Office 892, No. 5, 1782 (Nov. 30, 1971)

The marine antifoulant compositions include cobalt, copper, and manganese salts of terephthalic acid. FTP

4.81 STABLE LIQUID SHORTENING AND METHOD OF PRODUCING SAME

Reid, Edward J. (Brea, CA 92621); assignor to Hunt-Wesson Foods, Inc., Fullerton, Calif. (pat.)
U.S. Patent 3,623,888
Official Gazette of the U.S. Patent Office 892, No. 5, 1781 (Nov. 30, 1971)

4.82 ODORLESS AND NONCAKING UREA COMPOSITIONS

Patterson, Paul R., Darryl D. Fry, and Irving Klothen (American Cyanamid Co.)
German Offen. (Patent) 2,054,735 (May 13, 1971)
Chemical Abstracts 75, No. 7, 47668n (Aug. 16, 1971)

2.3 CONTINUOUS HIGH TEMPERATURE PROCESS FOR RECLAIMING REUSABLE FRYING FATS

Lowrey, Erlend R. (Greenhills, OH 45218), and Robert O. Schmitt (Wyoming, OH 45215); assignors to Procter & Gamble Co., Cincinnati, Ohio (pat.)
U.S. Patent 3,616,909
Official Gazette of the U.S. Patent Office 892, No. 1, 120-121 (Nov. 2, 1971)

Reusable frying fat is reclaimed by introducing it into a cylindroconical-shaped zone in which the fat is subjected to vortical forces. FTP

2.3 DEEP FRYING PROCESS

Bolton, A., P. J. Philpott, and H. W. Scoats; Unilever Ltd. (pat.)
Canadian Patent 877,242
Food Technology 25, No. 12, 77 (1289) (Dec. 1971)

Pieces of foodstuff are quickly passed into a stream of hot frying oil. FTP

3.63 DEHYDRATION PROCESS

Tooby, G. J. (pat.)
British Patent 1,238,077
Food Technology 25, No. 12, 76 (1288) (Dec. 1971)

A zeolite desiccating agent is used to remove moisture from the air used in drying the product--the drying air is alternately passed over the food and the zeolite material. FTP

3.63 PRESERVATION PROCESS

Nakamura, S. (pat.)
Japanese Patent 17931/71
Food Technology 25, No. 12, 77 (1289) (Dec. 1971)

Foodstuffs are frozen in ethanol at less than 30° C. [sic]; then they are dried with dry air at a freezing temperature. FTP

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